

=> fil reg

FILE 'REGISTRY' ENTERED AT 16:05:14 ON 18 AUG 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 American Chemical Society (ACS)

=> d his ful

(FILE 'HOME' ENTERED AT 11:06:28 ON 18 AUG 2006)

FILE 'HCAPLUS' ENTERED AT 11:06:54 ON 18 AUG 2006

E US20040009399/PN

L1 1 SEA US20040009399/PN

FILE 'REGISTRY' ENTERED AT 11:08:02 ON 18 AUG 2006

L2 25 SEA (110-71-4/BI OR 111-96-6/BI OR 116-15-4/BI OR

L3 1 SEA 9003-56-9/RN

L4 1 SEA 7704-34-9/RN

L5 41 SEA (LI(L)S)/ELS (L) 2/ELC.SUB
SAV L5 WEI870LIS/A

FILE 'HCAPLUS' ENTERED AT 11:48:50 ON 18 AUG 2006

L6 238042 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR GALVAN? OR WET OR DRY OR PRIMARY OR SECONDARY) (2A) (CEL
L OR CELLS)

L7 137600 SEA L4

L8 4396 SEA (SULFUR OR SULPHUR OR S) (3A)L6

FILE 'REGISTRY' ENTERED AT 12:00:02 ON 18 AUG 2006

L9 1 SEA "ACRYLONITRILE-BUTADIENE COPOLYMER"/CN

L10 1 SEA "STYRENE-BUTADIENE COPOLYMER"/CN

FILE 'HCAPLUS' ENTERED AT 13:41:28 ON 18 AUG 2006

L11 235963 SEA L3 OR ABS OR ACRYLONITRILE(A) BUTADIENE (A) STYRENE

L12 35052 SEA L9 OR (ACRYLONITRILE(A) BUTADIENE OR AB) (2A) (POLYM?
OR COPOLYM? OR HOMOPOLYM? OR RESIN?)

L13 63725 SEA L10 OR (STYRENE(A) BUTADIENE OR SB) (2A) (POLYM? OR
COPOLYM? OR HOMOPOLYM? OR RESIN?)

L14 996 SEA L5

L15 799 SEA L8 AND (L7 OR L14)

L16 21 SEA L15 AND (L11 OR L12 OR L13)

L17 36 SEA L8 AND (L11 OR L12 OR L13)

FILE 'REGISTRY' ENTERED AT 14:06:01 ON 18 AUG 2006

L18 10692 SEA FLPO/PCT

FILE 'HCAPLUS' ENTERED AT 14:06:27 ON 18 AUG 2006
 L19 94663 SEA L18 OR FLUORI? (2A) (POLYM? OR COPOLYM? OR HOMOPOLYM?
 OR RESIN?)
 L20 QUE BINDER?
 L21 60752 SEA BUTADIENE? (2A) (POLYM? OR COPOLYM? OR HOMOPOLYM? OR
 RESIN?)
 L22 10 SEA L8 AND L21
 L23 17 SEA L17 AND L19
 L24 6 SEA L22 AND L19

FILE 'REGISTRY' ENTERED AT 14:35:23 ON 18 AUG 2006
 L25 2 SEA BUTADIENE/CN
 D STR 1-2
 SEL L25 2 RN
 EDIT E1-E1 /BI /CRN
 L26 10153 SEA 106-99-0/CRN
 L27 10078 SEA L26 AND PMS/CI
 L28 15 SEA C3F6/MF
 D STR 1-5
 SEL L28 3,4 RN
 EDIT E1-E2 /BI /CRN
 L29 0 SEA (173693-32-8/CRN OR 175520-04-4/CRN)
 L30 1982 SEA 116-15-4/CRN
 L31 2353 SEA 75-38-7/CRN
 L32 656 SEA L30 AND L31

FILE 'HCAPLUS' ENTERED AT 15:08:27 ON 18 AUG 2006
 L33 141169 SEA L27
 L34 5670 SEA L32
 L35 258377 SEA (POSITIVE? OR POS#) (A) ELECTROD## OR CATHOD##
 L36 2529 SEA (SULFUR OR SULPHUR OR S OR L4) (3A)L35
 L37 4400 SEA (SULFUR OR SULPHUR OR S OR L4) (3A)L6
 L38 417 SEA L14 AND L6
 L39 235 SEA L14 AND L35
 L40 53 SEA (L36 OR L37 OR L38 OR L39) AND (L11 OR L12 OR L13)
 L41 39 SEA (L36 OR L37 OR L38 OR L39) AND (L33 OR L21)
 L42 58 SEA L40 OR L41
 L43 4013 SEA (LITHIUM OR LI) (3A) (SULFUR OR SULPHUR OR S OR L7)
 L44 QUE EMULSION?
 L45 22 SEA L42 AND L43
 L46 2 SEA L45 AND L44
 L47 2 SEA L46 AND (L19 OR L34)
 L48 2 SEA L42 AND L44
 L49 2 SEA L46 OR L47 OR L48
 L50 90 SEA L20 AND L43
 L51 79 SEA L50 AND L6
 L52 15 SEA L51 AND (L21 OR L33)

L53 11 SEA L52 AND (L19 OR L34)
 L54 20 SEA L45 NOT L49
 L55 1 SEA L53 NOT (L49 OR L54)
 L56 0 SEA L52 NOT (L49 OR L54 OR L55)
 L57 189 SEA L20 AND (L36 OR L37)
 L58 19 SEA L57 AND (L21 OR L33)
 L59 12 SEA L58 AND (L19 OR L34)
 L60 2 SEA L59 NOT (L49 OR L54 OR L55)
 L61 3 SEA L58 NOT (L49 OR L54 OR L55 OR L60)
 L62 31 SEA L42 NOT (L49 OR L54 OR L55 OR L60 OR L61)

=> fil hcap
 FILE 'HCAPLUS' ENTERED AT 16:05:22 ON 18 AUG 2006
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
 COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

=> d 149 ibib abs hitstr hitind 1-2

L49 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:39670 HCAPLUS
 DOCUMENT NUMBER: 140:79840
 TITLE: Binder for a lithium-sulfur
 battery cathode
 INVENTOR(S): Kim, Seok; Jung, Yongju; Han, Ji-Seong; Kim,
 Jan-Dee
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004009399	A1	20040115	US 2003-614870	200307 09
KR 2004005439	A	20040116	KR 2002-40006	200207 10

JP 2004047462

A2

20040212

JP 2003-166410

200306

11

CN 1471184

A

20040128

CN 2003-145326

200307

03

PRIORITY APPLN. INFO.:

KR 2002-40006

A

200207

10

AB Disclosed is a binder for a **lithium-sulfur battery** including a **butadiene-based copolymer**. The binder exhibits chem. resistance to polysulfides, is stable at battery working temps., forms an **emulsion** in org. solvents and exhibits high adherence to pos. active materials and electrodes used in the **lithium-sulfur battery**. The disclosed binder compns., due to their high adherence to pos. active materials allow for higher relative amts. of pos. active materials to be used in the battery resulting in a high capacity **lithium-sulfur battery**.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for lithium-sulfur battery cathode)

RN 9003-56-9 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

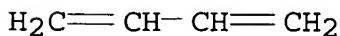
CMF C3 H3 N



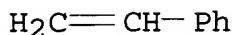
CM 2

CRN 106-99-0

CMF C4 H6



CM 3

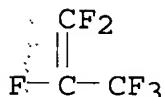
CRN 100-42-5
CMF C8 H8

IT 9011-17-0 24981-14-4, Ethene, fluoro-homopolymer
 25038-71-5, Ethylene-tetrafluoroethylene copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (binder for lithium-sulfur battery
 cathode)

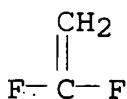
RN 9011-17-0 HCPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
 (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4
CMF C3 F6

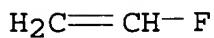
CM 2

CRN 75-38-7
CMF C2 H2 F2

RN 24981-14-4 HCPLUS
 CN Ethene, fluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

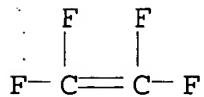
CRN 75-02-5
 CMF C2 H3 F



RN 25038-71-5 HCPLUS
 CN Ethene, tetrafluoro-, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
 CMF C2 F4



CM 2

CRN 74-85-1
 CMF C2 H4



IT 9003-18-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder for lithium-sulfur
 battery cathode)

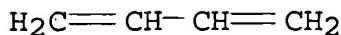
RN 9003-18-3 HCPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
 CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6

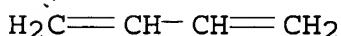
IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for **lithium-sulfur battery cathode**)

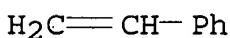
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6

CM 2

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-62

ICS H01M004-58; C08F036-06; C08F036-14; C08F036-16

INCL 429217000; 429218100; 526291000; 526335000; 526339000; 526340000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium sulfur battery cathode**
binderIT Adhesion, physical
Battery cathodes
Binders(binder for **lithium-sulfur battery**)

IT **cathode)**
ABS rubber
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (binder for **lithium-sulfur battery**
 cathode)
IT Secondary batteries
 (lithium; binder for **lithium-sulfur**
 battery cathode)
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
 (viscosity control agent; binder for **lithium-**
 sulfur battery cathode)
IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
 (abs rubber, binder for **lithium-**
 sulfur battery cathode)
IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
1,3-Dioxolane 7704-34-9, **Sulfur**, uses 33454-82-9,
Lithium triflate
RL: DEV (Device component use); USES (Uses)
 (binder for **lithium-sulfur battery**
 cathode)
IT 116-15-4 9011-17-0 24981-14-4, Ethene,
fluoro-homopolymer 25038-71-5, Ethylene-
tetrafluoroethylene copolymer 156395-51-6
RL: MOA (Modifier or additive use); USES (Uses)
 (binder for **lithium-sulfur battery**
 cathode)
IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder for **lithium-sulfur**
 battery cathode)
IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder for **lithium-**
 sulfur battery cathode)
IT 9002-89-5, Polyvinyl alcohol 9002-98-6 9003-01-4, Polyacrylic
acid 9003-05-8, Polyacrylamide 9003-39-8, Polyvinyl pyrrolidone
9004-32-4, Carboxymethyl cellulose sodium salt 9004-34-6D,
Cellulose, deriv. 9004-62-0, Hydroxyethyl cellulose 9004-65-3,
Hydroxypropyl Methyl cellulose 9004-67-5, Methyl cellulose
25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
 (viscosity control agent; binder for **lithium-**
 sulfur battery cathode)

L49 ANSWER 2 OF 2 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1992:430545 HCPLUS
 DOCUMENT NUMBER: 117:30545
 TITLE: Manufacture of battery electrodes
 INVENTOR(S): Arai, Kenji; Yoshino, Akira
 PATENT ASSIGNEE(S): Asahi Kasei Kogyo K. K., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04051459	A2	19920219	JP 1990-157556	199006 18
JP 2872354	B2	19990317	JP 1990-157556	199006 18
PRIORITY APPLN. INFO.:				

AB Aq. dispersion of carbonaceous powder and non-fluoride polymers are applied on a substrate and dried to give a battery electrode. Preferably, the carbonaceous powder has av. particle diam. 0.1-50 μ m. A mixt. of needle coke, polyethylene emulsion, and CMC was mixed with 0.1N NH4OH and coated on a Ni foil to obtain an anode for use in batteries with a Li1.03Co0.95Sn0.042O2 cathode.

IT 9003-55-8

RL: USES (Uses)

(rubber, carboxy-contg., anodes contg. needle coke and, for secondary lithium batteries)

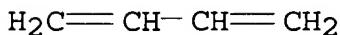
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

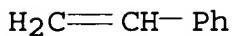
CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-04
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 9002-88-4, Polyethylene 25608-26-8, Polyethylene
RL: USES (Uses)
(anodes contg. needle coke and, for secondary lithium
batteries, Chemipearl S-100)
IT 9003-55-8
RL: USES (Uses)
(rubber, carboxy-contg., anodes contg. needle coke and, for
secondary lithium batteries)

=> d 154 ibib abs hitstr hitind 1-20

L54 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:706706 HCAPLUS
DOCUMENT NUMBER: 145:127692
TITLE: Active mass composition for secondary lithium
battery anode, anode prepared from the
composition and the battery containing the anode
Koo, Chang Il
INVENTOR(S):
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
KR 2004036459	A	20040430	KR 2002-65657	200210 26

PRIORITY APPLN. INFO.:

KR 2002-65657

200210
26

AB An active mass compn. for a secondary lithium battery anode is provided to improve binding capacity, charging-discharging properties and battery capacity of a lithium battery which contains the anode plate prep'd. from the compn. The compn. comprises an anode active mass, a binder and a solvent, wherein the binder is a mixt. of sulfur (S_x) (x = integer 1-8) and ≥1 polymer **resin selected from styrene-butadiene** rubber, butadiene rubber, isobutylene-isoprene rubber, acrylate butadiene rubber, acrylonitrile-butadiene rubber, polychloroprene, polyisobutylene butyl rubber, ethylene-propylene rubber, chlorosulfonated polyethylene, ethylene-vinyl acetate copolymer, ethylene-acrylate copolymer, polyperfluorovinyl Me ether, polyperfluorobutyl acrylate and polyhexafluoropropylene oxide.

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; anodes contg. mixts. of sulfur and polymer resins as binders for secondary lithium batteries)

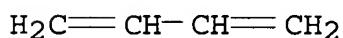
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

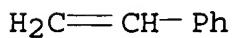
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery anode binder
sulfur polymer resin

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; anodes contg. mixts. of sulfur and
 polymer resins as binders for secondary lithium batteries)

L54 ANSWER 2 OF 20 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:105597 HCPLUS

TITLE: Inorganic Electrolyte Salt for Lithium Batteries

AUTHOR(S): Gorkovenko, Alexander; Jaffe, Stephen

CORPORATE SOURCE: Material Methods, Irvine, CA, 92618, USA

SOURCE: Abstracts, 40th Western Regional Meeting of the
 American Chemical Society, Anaheim, CA, United
 States, January 22-25 (2006), WRM-069. American
 Chemical Society: Washington, D. C.

CODEN: 69HUVH

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB The highest specific energy rechargeable battery available today is the Lithium-Ion. Today this technol. is mature, and its max. specific energy will be about 200 Wh/kg. Primary Lithium batteries offer more. Li/thionyl chloride can deliver 550 Wh/kg and high rates. The **abs.** champion, Li/CF_x, is 820 Wh/kg, at low rates. More specific energy is needed from secondary batteries. Next generation of lithium batteries is based on the use of lithium metal anodes and **sulfur** contg. liq. cathodes. The theor. limit of the Li/S pair is 2450 Wh/kg, that is 5 times more then the C/LiCoO₂, Li ion pair, (510 Wh/kg). Novel components of lithium batteries electrolytes are needed to improve specific energy, reduce irreversible capacity loss, improve charge efficiency and increase lithium cycling efficiency in secondary batteries. LiPF₆ and LiBF₄ are the main Li salts of secondary and primary batteries. New Li salts with anode protecting properties are needed. The novel inorg. lithium salt, LiMM was synthesized, characterized and tested in rechargeable lithium batteries. This lithium salt is highly sol. in org. solvents with cond. max. of apprx. 7 mS/cm at RT. The salt is thermally stable in org. solvents up to 200 °C. Ionic cond. and d. of LiMM/PC/DME electrolytes at RT is presented in the Table 1. Results of LiMM synthesis and testing are discussed.

L54 ANSWER 3 OF 20 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:976041 HCPLUS

DOCUMENT NUMBER: 143:269627

TITLE: Secondary lithium/**sulfur**

batteries providing high discharge capacity

INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;

PATENT ASSIGNEE(S) : Miyake, Masahide; Fujimoto, Masahisa
 SOURCE: Sanyo Electric Co., Ltd., Japan
 Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
JP 2005243518	A2	20050908	JP 2004-53879	200402 27

PRIORITY APPLN. INFO.:	JP 2004-53879	200402 27
------------------------	---------------	--------------

AB The batteries comprise cathodes contg. sulfur (s), elec. conductors, and binders contg. styrene-butadiene rubbers, wherein polytetrafluoroethylene is included in the binders, too. The batteries show high discharge capacity d. even if the electrode-filling d. is high.

IT 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (cathode active mass; secondary Li/S
 battery contg. styrene-butadiene rubber and
 polytetrafluoroethylene as cathode binders)

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, binder; secondary Li/
 S battery contg. styrene-butadiene rubber and
 polytetrafluoroethylene as cathode binders)

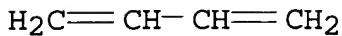
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

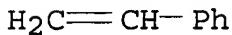
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62
ICS H01M004-38; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium sulfur battery cathode
binder styrene butadiene rubber; polytetrafluoroethylene binder
lithium sulfur battery
IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(binder; secondary Li/S battery
contg. styrene-butadiene rubber and polytetrafluoroethylene as
cathode binders)
IT Battery cathodes
Secondary batteries
(secondary Li/S battery contg.
styrene-butadiene rubber and polytetrafluoroethylene as cathode
binders)
IT Fluoropolymers, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(secondary Li/S battery contg.
styrene-butadiene rubber and polytetrafluoroethylene as cathode
binders)
IT 9002-84-0, Polytetrafluoroethylene
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(binder additive; secondary Li/S
battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)
IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(cathode active mass; secondary Li/S

battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)
(cathode elec. conductor; secondary Li/S

battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, binder; secondary Li/
S **battery** contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

L54 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:361886 HCAPLUS

DOCUMENT NUMBER: 142:414509

TITLE: Organic electrolytic solution for lithium
battery

INVENTOR(S): Kim, Ju-Yup; Kim, Han-Soo; Park, Jin-Hwan; Lee,
Seok-Soo

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1526600	A1	20050427	EP 2004-256478	200410 20
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
US 2005106471	A1	20050519	US 2004-968903	200410 21
CN 1610179	A	20050427	CN 2004-10095920	200410 22
JP 2005129540	A2	20050519	JP 2004-309983	200410 25
PRIORITY APPLN. INFO.:			KR 2003-74661	A

200310
24

OTHER SOURCE(S): MARPAT 142:414509

AB The present invention is related to an org. electrolytic soln. comprising a halogenated benzene compd., such as 1-iodobenzene or 1-chlorobenzene. Specifically, the halogenated benzene compd. has a high polarity and is capable of reducing the reactivity of the lithium metal surface. Due to these characteristics of the halogenated benzene compd., the lithium ions are unlikely to bond with the sulfide anions. Therefore, the solv. of the sulfide within the electrolyte is increased, thereby improving the charge/discharge efficiency characteristics of the lithium ions and the lifespan of batteries. Moreover, the org. electrolytic soln. of the present invention may be used in any battery type where an anode is composed of lithium metal, and in particular, **lithium sulfur batteries.**

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for lithium battery)

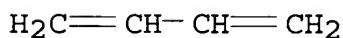
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

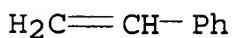
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M010-40

ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; org. electrolytic soln. for lithium
 battery)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L54 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:253918 HCAPLUS

DOCUMENT NUMBER: 142:319831

TITLE: Polymer film containing **cathode** and
lithium/sulfur battery
 using the **cathode**

INVENTOR(S): Kim, Chu-Hwa; Liu, Young-Kyun; Cho, Ming-Dong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005079096	A2	20050324	JP 2004-247052	200408 26
US 2005175903	A1	20050811	US 2004-924912	200408 25
US 7078124	B2	20060718		
CN 1591934	A	20050309	CN 2004-10085179	200408 27
PRIORITY APPLN. INFO.:			KR 2003-60197	A 200308 29

AB The cathode has an active mass layer contg. S and/or metal
 (poly)sulfide on a conductive support, and a polymer contg. a nonaq.
 electrolyte soln. forming a film on the active mass layer and filled
 in the pores in the active mass layer.

IT 7704-34-9, **Sulfur**, uses

RL: DEV (Device component use); USES (Uses)
 (cathodes having nonaq. electrolyte soln. contg.
 polymer on surface and in pores of active mass layer for sodium/

sulfur batteries)

RN 7704-34-9 HCPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; cathodes having nonaq. electrolyte
 soln. contg. polymer on surface and in pores of active mass layer
 for sodium/**sulfur batteries**)

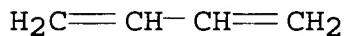
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

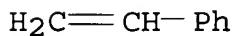
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-02

ICS H01M004-38; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **sulfur battery cathode**

polymer electrolyte layer filling

IT Battery cathodes

(cathodes having nonaq. electrolyte soln. contg. polymer on
 surface and in pores of active mass layer for sodium/
sulfur batteries)

IT Carbon black, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/**sulfur batteries**)

- IT 109-87-5, Dimethoxymethane 111-96-6, Diglyme 646-06-0, Dioxolane 7429-90-5, Aluminum, uses 7704-34-9, **Sulfur**, uses 15625-89-5, Tmpta 17831-71-9D, Tetra(ethylene glycol)diacrylate, polymer 25721-76-0D, Poly(ethylene glycol)dimethacrylate, polymer 25852-47-5D, Poly(ethylene glycol)dimethacrylate, polymer 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/**sulfur batteries**)
- IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/**sulfur batteries**)

L54 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219961 HCAPLUS

DOCUMENT NUMBER: 142:282885

TITLE: Organic electrolytic solution for
lithium-sulfur battery

INVENTOR(S): Ryu, Young-Gyo; Cho, Myung-Dong; Lee,
 Sang-Mock; Trofimov, Boris A.

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 7 pp.
 CODEN: USXXCO

DOCUMENT TYPE: Patent

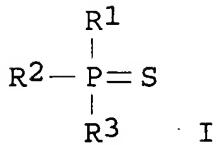
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
US 2005053842	A1	20050310	US 2004-927188	200408 27
JP 2005085761	A2	20050331	JP 2004-257357	200409 03
CN 1610178	A	20050427	CN 2004-10068748	200409 06

PRIORITY APPLN. INFO.: KR 2003-62171 A

200309
05OTHER SOURCE(S) : MARPAT 142:282885
GI

AB An org. electrolytic soln. for a **lithium-sulfur battery** that can improve discharge capacity and cycle life of the **battery**, and a **lithium-sulfur battery** using the org. electrolytic soln. are disclosed. The electrolytic soln. includes a lithium salt, an org. solvent, and further a phosphine sulfide-based compd. represented by formula (I), wherein R1, R2 and R3 are the same or different from each other, and each represents one selected from the group consisting of a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C6-30 aryl group, a substituted or unsubstituted C1-30 alkoxy group and a substituted or unsubstituted C8-30 Ar-alkenyl group. The electrolytic soln. including the phosphine sulfide-based compd. represented by I can suppress prodn. of lithium sulfides so that a redn. in battery capacity can be prevented.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

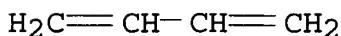
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

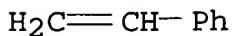
CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-58
 ICS H01M010-40; H01M004-62
INCL 429326000; 429340000; 429218100; 429329000; 429232000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery** org electrolyte
IT Esters, uses
 RL: DEV (Device component use); USES (Uses)
 (alkyl; org. electrolytic soln. for **lithium-sulfur battery**)
IT Nitriles, uses
 RL: DEV (Device component use); USES (Uses)
 (arom.; org. electrolytic soln. for **lithium-sulfur battery**)
IT Secondary batteries
 (lithium; org. electrolytic soln. for **lithium-sulfur battery**)
IT Battery electrolytes
 (org. electrolytic soln. for **lithium-sulfur battery**)
IT Amides, uses
Lactones
Polyethers, uses
 RL: DEV (Device component use); USES (Uses)
 (org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon black, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon fibers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (org. electrolytic soln. for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (org. electrolytic soln. for **lithium-sulfur battery**)
IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)

(org. electrolytic soln. for lithium-sulfur
battery)

- IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
105-58-8, Diethyl carbonate 107-31-3, Methyl formate 109-99-9,
Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Methyl
ethyl carbonate 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane 4319-13-5
7439-93-2, Lithium, uses 7440-44-0D, Carbon, polymers, with sulfur
7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, polymers, with carbon
7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene
9003-07-0, Polypropylene 14283-07-9, Lithium tetrafluoroborate
21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 56525-42-9,
Methyl propyl carbonate 74432-42-1, Lithium polysulfide
90076-65-6 132404-42-3 132843-44-8
RL: DEV (Device component use); USES (Uses):
(org. electrolytic soln. for lithium-sulfur
battery)
- IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses):
(org. electrolytic soln. for lithium-sulfur
battery)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses):
(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

L54 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:219959 HCAPLUS
DOCUMENT NUMBER: 142:300973
TITLE: Organic electrolytic solution for
lithium-sulfur battery
INVENTOR(S): Ryu, Young-Gyo; Cho, Myung-Dong; Lee,
Sang-Mock; Trofimov, Boris A.
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
-----	-----	-----	-----	-----
US 2005053839	A1	20050310	US 2004-927182	

JP 2005085760	A2	20050331	JP 2004-257356	200408 27
CN 1595712	A	20050316	CN 2004-10068750	200409 03
PRIORITY APPLN. INFO.:			KR 2003-62172	A 200309 05

OTHER SOURCE(S) : MARPAT 142:300973

AB An org. electrolytic soln. for a **lithium-sulfur battery** that provides high discharge capacity and longer cycle life to the **battery**, and a **lithium-sulfur battery** including the org. electrolytic soln. are provided. The electrolytic soln. includes a lithium salt, an org. solvent, and further a compd. represented by the formula $[R_1CH(OR_2)CH_2]_2S_x$ where R_1 is selected from the group consisting of a H, a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C1-30 alkoxy group, a substituted or unsubstituted C6-30 aryl group, and a substituted or unsubstituted C8-30 Ar alkenyl group; R_2 represents a group of the formula $(R_3O)R_4(R_5O)C$ or $R_6R_7R_8Si$; wherein R_3-R_8 are independently a H atom, a C1-5 linear or branched alkoxy group; and x is an integer from 2-5.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for **lithium-sulfur battery**)

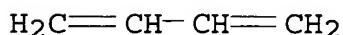
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58
ICS H01M004-60; H01M006-16
INCL 429231950; X42-918.8; X42-933.6; X42-933.7; X42-933.9; X42-934.0;
X42-934.1; X42-934.2
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery** org electrolyte
polysulfide
IT Esters, uses
RL: DEV (Device component use); USES (Uses)
(alkyl; org. electrolytic soln. for **lithium-sulfur battery**)
IT Nitriles, uses
RL: DEV (Device component use); USES (Uses)
(arom.; org. electrolytic soln. for **lithium-sulfur battery**)
IT Secondary batteries
(lithium; org. electrolytic soln. for **lithium-sulfur battery**)
IT Battery electrolytes
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Amides, uses
Lactones
Polyethers, uses
Polysulfides
RL: DEV (Device component use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)

(org. electrolytic soln. for lithium-sulfur
battery)

- IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0
105-58-8, Diethyl carbonate 107-31-3, Methyl formate 109-99-9,
Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0,
Methylethylcarbonate 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane 7429-90-5,
Aluminum, uses 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses
7704-34-9D, Sulfur, carbon compd., polymer 7704-34-9D, Sulfur,
compd. 7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene
9003-07-0, Polypropylene 14283-07-9, Lithium tetrafluoroborate
21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 56525-42-9,
Methylpropylcarbonate 74432-42-1, Lithium polysulfide 90076-65-6
132404-42-3 132843-44-8 847612-71-9
RL: DEV (Device component use); USES (Uses)
(org. electrolytic soln. for lithium-sulfur
battery)
- IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for lithium-sulfur
battery)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

L54 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1019589 HCAPLUS
DOCUMENT NUMBER: 142:9218
TITLE: Cathodes for lithium secondary
batteries
INVENTOR(S): Kim, Jan-Dee; Kim, Seok; Choi, Su-Suk; Han,
Ji-Seong
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
-----	-----	-----	-----	-----
US 2004234851	A1	20041125	US 2004-845192	

KR 2004100259	A	20041202	KR 2003-32549	200405 14
CN 1574427	A	20050202	CN 2004-10071492	200305 22
JP 2004349263	A2	20041209	JP 2004-152981	200405 22
PRIORITY APPLN. INFO.:				200405 24
KR 2003-32549				A
				200305 22

AB The **cathode** of a Li secondary **battery** contains a **cathode** active material, an elec. conductive material, a binder, and a thickener - a nonionic cellulose-based compd.

IT 12136-58-2, Lithium sulfide 725228-54-6D, sulfonated

RL: DEV (Device component use); USES (Uses)
(**cathode** material for lithium secondary **battery**)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

RN 725228-54-6 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

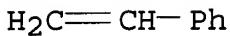
CMF C₄ H₆

H₂C=CH—CH=CH₂

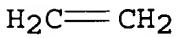
CM 2

CRN 100-42-5

CMF C8 H8



CM 3

CRN 74-85-1
CMF C2 H4

IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
(nitrile rubber; **cathode** material for lithium secondary
battery)

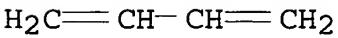
RN 9003-18-3 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N

CM 2

CRN 106-99-0
CMF C4 H6

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; **cathode** material for lithium
secondary **battery**)

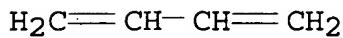
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

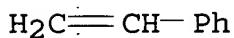
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

ICS H01M004-58; H01M004-60

INCL 429217000; 429218100; 429213000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery cathode sulfur**

carbon binder thickener

IT **Battery cathodes**

(cathode material for lithium secondary **battery**)

IT Carbon black, uses

Fluoropolymers, uses

Nitrile rubber, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(cathode material for lithium secondary **battery**)

IT Secondary **batteries**

(lithium; **cathode** material for lithium secondary **battery**)

IT 9004-62-0, Hydroxyethyl cellulose 9004-64-2, Hydroxypropyl cellulose 9004-65-3, Hydroxypropyl methyl cellulose 9004-67-5, Methyl cellulose 9011-17-0 9062-14-0, Hydroxypropyl ethyl cellulose 10544-50-0, **Sulfur** (S8), uses 12136-58-2, Lithium sulfide 24937-79-9, Polyvinylidene fluoride 63143-57-7, Carbon sulfide 725228-54-6D, sulfonated

IT 9003-18-3
 RL: DEV (Device component use); USES (Uses)
 (cathode material for lithium secondary battery
)
 IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (nitrile rubber; cathode material for lithium secondary
 battery)
 IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; cathode material for lithium
 secondary battery)

L54 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:943544 HCAPLUS
 DOCUMENT NUMBER: 142:180346
 TITLE: Positive electrode for
 lithium-sulfur battery
 and preparation méthode thereof
 INVENTOR(S): Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun; Kim,
 Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon, Chang
 Wi
 PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
KR 2003006745	A	20030123	KR 2001-42634	200107 14

PRIORITY APPLN. INFO.:	KR 2001-42634	200107 14
------------------------	---------------	--------------

AB A composite pos. electrode compn. for a lithium-sulfur primary or secondary battery, a pos. electrode prep'd. from the compn. and its prep'n. method are provided, to increase the capacity by improving the utilization rate of sulfur active material and to improve the lifetime of a battery by enhancing the mech. properties of a pos. electrode. The composite pos. electrode compn. comprises a sulfur or organosulfur compd. which is such that sulfur elements can be

combined and sepd. during the repeated charging and discharging process; a conductive material selected from conductive carbon and conductive polymers; and a binder material comprising a **butadiene-based copolymer** and a polysaccharide-based polymer. Preferably the binder material comprises 1-10 parts by wt. of butadiene-styrene and 1-10 parts by wt. of CM-cellulose based on 100 parts by wt. of the electrode, and optionally comprises further a fluorine-based polymer.

IT 7704-34-9D, **Sulfur**, compds.

RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium
sulfur battery and prep. method thereof)

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8, **Styrene-butadiene**
copolymer

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(pos. electrode for lithium
sulfur battery and prep. method thereof)

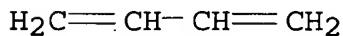
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

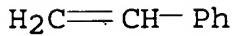
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST pos electrode lithium sulfur
battery cathode organo sulfur rubber;
butadiene rubber polysaccharide fluoropolymer blend binder
conductive carbon electrode
IT Fluoropolymers, uses
Polysaccharides, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(binder; pos. electrode for lithium
sulfur battery and prep. method thereof)
IT Synthetic rubber, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(butadiene copolymers, binder; pos.
electrode for lithium sulfur
battery and prep. method thereof)
IT Secondary batteries
(lithium; pos. electrode for lithium
sulfur battery and prep. method thereof)
IT Battery cathodes
Composites
Conducting polymers
(pos. electrode for lithium
sulfur battery and prep. method thereof)
IT Organic compounds, uses
RL: DEV (Device component use); USES (Uses)
(sulfur-contg.; pos. electrode for
lithium sulfur battery and prep.
method thereof)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(elec. conductive; pos. electrode for
lithium sulfur battery and prep.
method thereof)
IT 7704-34-9D, Sulfur, compds.
RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium
sulfur battery and prep. method thereof)
IT 9003-55-8, Styrene-butadiene
copolymer 9004-32-4
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(pos. electrode for lithium

sulfur battery and prepn. method thereof)

L54 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:430505 HCAPLUS
 DOCUMENT NUMBER: 140:426098
 TITLE: **Cathode for lithium-sulfur battery**
 INVENTOR(S): Hwang, Duck-chul
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 18 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004101753	A1	20040527	US 2003-719614	200311 21
KR 2004046139	A	20040605	KR 2002-73961	200211 26
KR 2004067030	A	20040730	KR 2003-3978	200301 21
JP 2004179160	A2	20040624	JP 2003-386584	200311 17
CN 1503385	A	20040609	CN 2003-10117953	200311 26
PRIORITY APPLN. INFO.:		KR 2002-73961	A	200211 26
		KR 2003-3978	A	200301 21

AB Disclosed is a pos. electrode for a lithium-sulfur battery including a pos. active material selected from elemental sulfur (S8), a sulfur-based compd. and mixts. thereof; a conductive material; a binder; and an inorg. additive with a particle size (v, 50%) of 5000 nm or less and

IT having insol. to an electrolyte.
 7704-34-9, **Sulfur**, uses 7704-34-9D,
Sulfur, compd.
 RL: DEV (Device component use); USES (Uses)
 (cathode for lithium-sulfur
 battery)
 RN 7704-34-9 HCPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-18-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nitrile rubber, coating; cathode for lithium
 -sulfur battery)
 RN 9003-18-3 HCPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

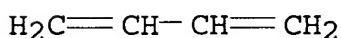
CM 1

CRN 107-13-1
 CMF C3 H3 N



CM 2

CRN 106-99-0
 CMF C4 H6



IT 106107-54-4 694491-73-1

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock,
sulfonated, coating; **cathode for lithium-
sulfur battery**)

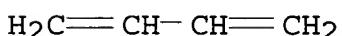
RN 106107-54-4 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

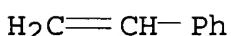
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



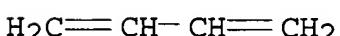
RN 694491-73-1 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

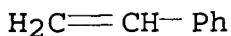
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 694491-73-1D, hydrogenated, block, triblock
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, sulfonated, coating; **cathode**
 for lithium-sulfur battery)

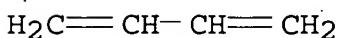
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
 INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58

ICS H01M002-16; H01M004-62

INCL 429218100; 429217000; 429137000; 429231950; 429232000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST **cathode lithium sulfur battery**

IT Battery cathodes

Ionic conductivity

Surface roughness

(cathode for lithium-sulfur
 battery)

IT Oxides (inorganic), uses

Sulfides, uses

RL: MOA (Modifier or additive use); USES (Uses)

(cathode for lithium-sulfur
 battery)

IT Fluoropolymers, uses

- RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Polyvinyl butyrals
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; cathode for lithium-sulfur battery)
- IT Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock, sulfonated, coating;
cathode for lithium-sulfur battery)
- IT Secondary batteries
(lithium; cathode for lithium-sulfur battery)
- IT 7429-90-5, Aluminum, uses 7440-44-0D, Carbon, sulfur compd., polymer 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, carbon compd., polymer 7704-34-9D, Sulfur, compd. 74432-42-1, Lithium polysulfide 90076-65-6
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadium oxide (V2O5), uses 1344-28-1, Aluminum oxide, uses 11099-11-9, Vanadium oxide 12039-13-3, Titanium sulfide (TiS2) 13463-67-7, Titanium oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT 1317-37-9, Iron sulfide Fes 1332-29-2, Tin oxide 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12022-71-8, Iron titanium oxide fetio3 12047-27-7, Barium titanium oxide batio3, uses 24937-79-9, Pvdf

- 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-1-vinyl-2-pyrrolidone copolymer 25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; **cathode for lithium-sulfur battery**)
- IT 7631-86-9, Colloidal silica, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (colloidal, coating; **cathode for lithium-sulfur battery**)
- IT 9003-18-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nitrile rubber, coating; **cathode for lithium-sulfur battery**)
- IT 106107-54-4 694491-73-1
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, hydrogenated, block, triblock, sulfonated, coating; **cathode for lithium-sulfur battery**)
- IT 694491-73-1D, hydrogenated, block, triblock
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, sulfonated, coating; **cathode for lithium-sulfur battery**)

L54 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:392153 HCAPLUS

DOCUMENT NUMBER: 140:378108

TITLE: **Cathode for lithium-sulfur battery**

INVENTOR(S): Hwang, Duck-chul

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
US 2004091776	A1	20040513	US 2003-693925	200310 28
KR 2004037322	A	20040507	KR 2002-65775	200210.

JP 2004152743	A2	20040527	JP 2003-274979	28
CN 1499659	A	20040526	CN 2003-10115679	200307 15
PRIORITY APPLN. INFO.:				200310 28
			KR 2002-65775	A
				200210 28

AB A pos. electrode for a lithium sulfur battery and a lithium sulfur battery include a pos. active material with a particle size (v, 50%) of 10 μm or less, or has an av. surface roughness of 5 μm . The pos. active material is selected from elemental sulfur, a sulfur-based compd.; and a mixt. thereof.

IT 9003-56-9
RL: TEM (Technical or engineered material use); USES (Uses)
(abs rubber, coatings; cathode for lithium sulfur battery)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

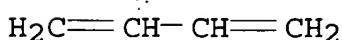
CMF C3 H3 N



CM 2

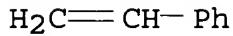
CRN 106-99-0

CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8



IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coatings; **cathode for lithium
sulfur battery**)

RN 9003-18-3 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

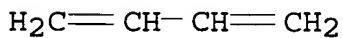
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



IT 9003-55-8

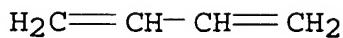
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, coatings; **cathode for
lithium sulfur battery**)

RN 9003-55-8 HCPLUS

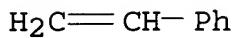
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-58
ICS B05D003-02; H01M002-16
INCL 429218100; 429137000; 427372200
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode lithium sulfur battery**
IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(butene-ethylene-styrene, block, triblock, sulfonated, coatings;
**cathode for lithium sulfur
battery**)
IT Battery cathodes
Coating materials
(**cathode for lithium sulfur
battery**)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**cathode for lithium sulfur
battery**)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polymers, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Polyvinyl butyrals
Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; **cathode for lithium sulfur
battery**)
IT Materials

- (inorg., coatings; **cathode for lithium sulfur battery**)
- IT Secondary batteries
 (lithium; **cathode for lithium sulfur battery**)
- IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (**cathode for lithium sulfur battery**)
- IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (C-coated; **cathode for lithium sulfur battery**)
- IT 9003-56-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**abs rubber, coatings; cathode for lithium sulfur battery**)
- IT 7439-93-2, Lithium, uses 7440-44-0D, Carbon, **sulfur** compd., polymer 7704-34-9D, **Sulfur**, carbon compd., polymer 10544-50-0, **Sulfur** s8, uses 74432-42-1, Lithium polysulfide
 RL: DEV (Device component use); USES (Uses)
 (**cathode for lithium sulfur battery**)
- IT 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin oxide 1332-37-2, Iron oxide, uses 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinyl pyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11099-11-9, Vanadium oxide 11126-12-8, Iron sulfide 12047-27-7, Barium titanate, uses 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate/vinylpyrrolidone copolymer 25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**coatings; cathode for lithium sulfur battery**)
- IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**colloidal, coatings; cathode for lithium sulfur battery**)
- IT 9003-18-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**nitrile rubber, coatings; cathode for lithium**)

sulfur battery)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, coatings; cathode for
lithium sulfur battery)

L54 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:203426 HCAPLUS

DOCUMENT NUMBER: 140:238424

TITLE: Positive electrode for
lithium-sulfur battery
and lithium-sulfur
battery and article of manufacture
including same

INVENTOR(S): Jung, Yongju; Kim, Seok; Choi, Yunsuk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
US 2004048154	A1	20040311	US 2003-370772	200302 24
EP 1443585	A2	20040804	EP 2003-4207	200302 25
EP 1443585	A3	20040811	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK	-----
JP 2004103548	A2	20040402	JP 2003-62292	200303 07
CN 1482693	A	20040317	CN 2003-120576	200303 14
PRIORITY APPLN. INFO.:			KR 2002-54951	A 200209 11

AB A pos. electrode for a lithium-

sulfur battery and a lithium-sulfur battery including the same have a pos. electrode that includes a pos. active material, a conductor, an org. binder, and an additive. The pos. active material includes at least one selected from elemental sulfur, a sulfur-based compd., or a mixt. thereof. The additive includes a polymer having at least one amino nitrogen group in main chains or side chains.

IT 7704-34-9, Sulfur, uses 12136-58-2,
Lithium sulfide

RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium-sulfur battery and lithium-sulfur battery and article of manuf. including same)

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 12136-58-2 HCPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-17-2, Polybutadiene

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(pos. electrode for lithium-sulfur battery and lithium-sulfur battery and article of manuf. including same)

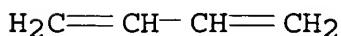
RN 9003-17-2 HCPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C₄ H₆



IC ICM H01M004-58
ICS H01M004-62
INCL 429212000; 429218100; 429217000; 429231950
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **pos electrode lithium sulfur**
battery article manuf including same
IT **Secondary batteries**
 (**lithium; pos. electrode for lithium-**
 -sulfur battery and lithium-
 sulfur battery and article of manuf. including
 same)
IT **Battery electrodes**
Binders
Secondary batteries
 (**pos. electrode for lithium-**
 sulfur battery and lithium-
 sulfur battery and article of manuf. including
 same)
IT Fluoropolymers, uses
Polyamides, uses
Polyesters, uses
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
 (**pos. electrode for lithium-**
 sulfur battery and lithium-
 sulfur battery and article of manuf. including
 same)
IT 7439-93-2, Lithium, uses 7704-34-9, **Sulfur**, uses
9011-14-7, Poly(methyl methacrylate) 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 12136-58-2
, Lithium sulfide 24937-79-9, Polyvinylidene fluoride
RL: DEV (Device component use); USES (Uses)
 (**pos. electrode for lithium-**
 sulfur battery and lithium-
 sulfur battery and article of manuf. including
 same)
IT 110-71-4 111-96-6, Diglyme 646-06-0, Dioxolane 9002-84-0,
Polytetrafluoroethylene 9002-86-2, Polyvinyl chloride 9003-01-4,
Polyacrylic acid 9003-17-2, Polybutadiene 9003-31-0,
Polyisoprene 9003-32-1, Polyethyl acrylate 9003-39-8, Polyvinyl
pyrrolidone 25014-41-9, Polyacrylonitrile 25038-54-4,
Polycaprolactam, uses 25038-59-9, Polyethylene terephthalate, uses
26913-06-4, Poly[imino(1,2-ethanediyl)] 90076-65-6
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
 (**pos. electrode for lithium-**

sulfur battery and lithium-sulfur battery and article of manuf. including same)

L54 ANSWER 13 OF 20 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:119840 HCPLUS
 DOCUMENT NUMBER: 140:149223
 TITLE: Method for producing cathode for lithium-sulfur battery
 INVENTOR(S): Hwang, Duck-chul; Park, Zin; Lee, Jae-woan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004029014	A1	20040212	US 2003-634748	200308 06
KR 2004013585	A	20040214	KR 2002-46581	200208 07
JP 2004071566	A2	20040304	JP 2003-283959	200307 31
CN 1495937	A	20040512	CN 2003-127272	200308 07
PRIORITY APPLN. INFO.:			KR 2002-46581	A 200208 07

AB The invention concerns a pos. electrode of a lithium-sulfur battery, a method of producing the same, and a lithium-sulfur battery include, as the pos. electrode, a current collector, a pos. active material layer on the current collector, and a polymer layer on the pos. active material on the current collector.
 IT 9003-56-9
 RL: DEV (Device component use); USES (Uses)
 (ABS rubber, method for producing cathode for lithium-sulfur battery)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

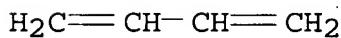
CMF C3 H3 N



CM 2

CRN 106-99-0

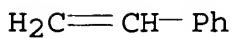
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing **cathode** for
lithium-sulfur battery)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

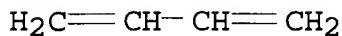
CM 1

CRN 107-13-1

CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6

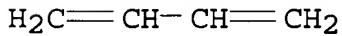
IT 106107-54-4

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock,
sulfonated; method for producing **cathode** for
lithium-sulfur battery)

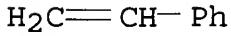
RN 106107-54-4 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6

CM 2

CRN 100-42-5
CMF C8 H8

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, method for producing **cathode**
for **lithium-sulfur battery**)

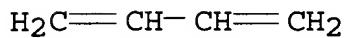
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

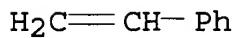
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 694491-73-1D, hydrogenated, block, triblock

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, sulfonated; method for producing
cathode for lithium-sulfur
battery)

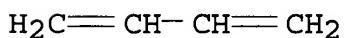
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M002-16
ICS H01M004-60; H01M004-58
INCL 429246000; 429251000; 429252000; 429218100; 429213000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode lithium sulfur battery**
IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylates, ethoxylated; method for producing **cathode**
for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated, block, triblock, sulfonated; method for producing
cathode for lithium-sulfur
battery)
IT Primary batteries
(lithium; method for producing **cathode for**
lithium-sulfur battery)
IT Battery cathodes
(method for producing **cathode for lithium-**
sulfur battery)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Polyvinyl butyrals
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(method for producing **cathode for lithium-**
sulfur battery)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for producing **cathode for lithium-**
sulfur battery)
IT 9003-56-9
RL: DEV (Device component use); USES (Uses)
(ABS rubber, method for producing **cathode for**
lithium-sulfur battery)
IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing **cathode for**
lithium-sulfur battery)

- IT 10344-93-1D, Acrylate, alkyl deriv.
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ethoxylated; method for producing **cathode** for
lithium-sulfur battery)
- IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
 1,3-Dioxolane 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin
 oxide 1332-37-2, Iron oxide, uses 7439-93-2, Lithium, uses
 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses 7704-34-9D,
 Sulfur, org. compd. 7791-03-9, Lithium perchlorate 9002-89-5,
 Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7,
 Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride
 copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose
 acetate 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer
 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
 11075-35-7, Vanadium titanium oxide 11099-11-9, Vanadium oxide
 11126-12-8, Iron sulfide 12673-92-6, Titanium sulfide
 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses
 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium
 hexafluorophosphate 24937-79-9, PVDF 25014-41-9,
 Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone
 copolymer 25322-68-3, Peo 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 49717-87-5, 2-Propenoic acid, ion(1-)
 homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-)
 homopolymer, uses 69822-67-9, Poly(carbon sulfide) 90076-65-6,
 Lithium bis(trifluoromethylsulfonyl)imide
- RL: DEV (Device component use); USES (Uses)
 (method for producing **cathode** for **lithium-sulfur battery**)
- IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-24-6,
 Strontium, uses 7440-28-0, Thallium, uses 7440-36-0, Antimony,
 uses 7440-38-2, Arsenic, uses 7440-56-4, Germanium, uses
 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6,
 Indium, uses 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method for producing **cathode** for **lithium-sulfur battery**)
- IT 9003-18-3
 RL: DEV (Device component use); USES (Uses)
 (nitrile rubber, method for producing **cathode** for
lithium-sulfur battery)
- IT 64401-02-1 84170-28-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating contg.; method for producing **cathode** for
lithium-sulfur battery)
- IT 7429-90-5, Aluminum, uses 7440-39-3, Barium, uses 7440-42-8,
 Boron, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen,
 uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses

7782-50-5, Chlorine, uses 26570-48-9, Polyethylene glycol diacrylate 52496-08-9, Polypropylene glycol diacrylate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating; method for producing **cathode** for
lithium-sulfur battery)

IT 106107-54-4

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, hydrogenated, block, triblock,
 sulfonated; method for producing **cathode** for
lithium-sulfur battery)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, method for producing **cathode**
 for **lithium-sulfur battery**)

IT 694491-73-1D, hydrogenated, block, triblock

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, sulfonated; method for producing
cathode for **lithium-sulfur**
battery)

L54 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:39669 HCAPLUS

DOCUMENT NUMBER: 140:79839

TITLE: Binder for **cathode** composition of
lithium-sulfur battery

INVENTOR(S): Kim, Seok; Jung, Yongju; Kim, Jan-Dee; Han,
 Ji-Seong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
US 2004009397	A1	20040115	US 2003-431367	200305 08
KR 2004005438	A	20040116	KR 2002-40005	200207 10
CN 1467258	A	20040114	CN 2003-131475	200305 15

JP 2004047460

A2 20040212

JP 2003-154868

200305

30

PRIORITY APPLN. INFO.:

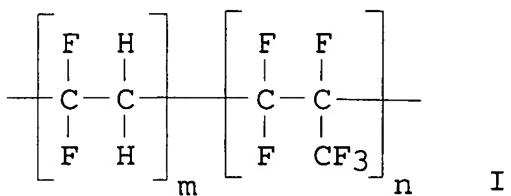
KR 2002-40005

A

200207

10

GI



AB A binder for a **lithium-sulfur battery** utilizes a fluorine-included polymer. The F-included polymer is represented by formula (I), where m is 0.5-1 and n is 0-0.5.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for **cathode** compn. of
lithium-sulfur battery)

RN 9003-56-9 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

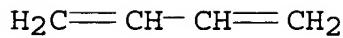
CMF C3 H3 N



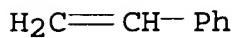
CM 2

CRN 106-99-0

CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8

IT 108146-73-2

RL: MOA (Modifier or additive use); USES (Uses)
(binder for cathode compn. of lithium-
sulfur battery)

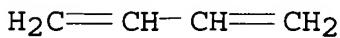
RN 108146-73-2 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene,
block (9CI) (CA INDEX NAME)

CM 1

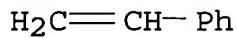
CRN 107-13-1
CMF C3 H3 N

CM 2

CRN 106-99-0
CMF C4 H6

CM 3

CRN 100-42-5
CMF C8 H8



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder for **cathode** compn. of
lithium-sulfur battery)

RN 9003-18-3 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

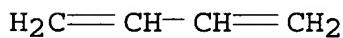
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder for **cathode** compn. of
lithium-sulfur battery)

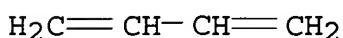
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

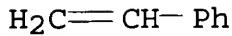
CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-62
ICS C08F014-18; C08F114-18
INCL 429217000; 526242000; 526250000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST cathode compn binder lithium sulfur
battery
IT Battery cathodes
Binders
(binder for cathode compn. of lithium-
sulfur battery)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder for cathode compn. of lithium-
sulfur battery)
IT Secondary batteries
(lithium; binder for cathode compn. of lithium-
sulfur battery)
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for cathode compn. of
lithium-sulfur battery)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(C-coated; binder for cathode compn. of lithium-
sulfur battery)
IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for cathode compn. of
lithium-sulfur battery)
IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(binder for cathode compn. of lithium-
sulfur battery)
IT 9002-83-9, Ethene, chlorotrifluoro-homopolymer 9011-17-0,

1,1-Difluoroethylene-hexafluoropropylene copolymer 24981-14-4,
 Ethene, fluoro-homopolymer 25038-71-5, Ethylene-
 tetrafluoroethylene copolymer 25067-11-2, Tetrafluoroethylene-
 hexafluoropropylene copolymer 25101-39-7, Ethylene,
 chlorotrifluoro-, polymer with propene 25101-45-5,
 Ethylene-trifluorochloroethylene copolymer 25120-58-5,
 Fluoroethylene-hexafluoropropylene copolymer 25684-78-0,
 1,1-Difluoroethylene-ethylene copolymer 25791-89-3 26008-14-0,
 Ethylene-fluoroethylene copolymer 26794-60-5, Fluoroethylene-
 propylene copolymer 27029-05-6, Propylene-tetrafluoroethylene
 copolymer 30871-57-9, 1,1-Difluoroethylene-propylene copolymer
 51772-72-6, Ethylene, chlorotrifluoro--hexafluoropropylene copolymer
108146-73-2 156395-51-6 640266-36-0 640266-37-1

RL: MOA (Modifier or additive use); USES (Uses)
 (binder for **cathode** compn. of **lithium-**
sulfur battery)

IT **9003-18-3**

RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder for **cathode** compn. of
lithium-sulfur battery)

IT **9003-55-8**

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder for **cathode** compn. of
lithium-sulfur battery)

IT 9002-89-5, Polyvinyl alcohol 9002-98-6 9003-01-4, Polyacrylic
 acid 9003-05-8, Polyacrylamide 9003-39-8, Polyvinylpyrrolidone
 9004-32-4, Carboxymethyl cellulose sodium salt 9004-62-0,
 Hydroxyethyl cellulose 9004-65-3, Hydroxypropyl Methyl cellulose
 9004-67-5, Methyl cellulose 25322-68-3, Peo

RL: MOA (Modifier or additive use); USES (Uses)
 (viscosity control agent; binder for **cathode** compn. of
lithium-sulfur battery)

L54 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:590669 HCAPLUS

DOCUMENT NUMBER: 139:120003

TITLE: **Cathode for lithium-**
sulfur battery of high energy
 density

INVENTOR(S): Han, Ji-Seong; Choi, Su-Suk; Park, Seung-Hee;
 Choi, Yun-Suk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003143462	A1	20030731	US 2002-310822	200212 06
KR 2003063060	A	20030728	KR 2002-3625	200201 22
CN 1434525	A	20030806	CN 2002-158421	200212 24
JP 2003223897	A2	20030808	JP 2003-9505	200301 17
PRIORITY APPLN. INFO.:			KR 2002-3625	A 200201 22

AB A pos. electrode for a lithium-sulfur battery includes a pos. active material including a sulfur-based compd., an elec. conductive material, an agent for increasing viscosity, and a binder. The agent is selected from a cellulose-based compd., an ionically conductive polymer, and a mixt. thereof. The binder includes styrene-butadiene rubber.

IT 7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, compd.

RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur
battery of high energy d.)

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, **cathode for lithium**
-sulfur battery of high energy d.)

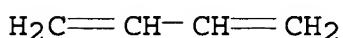
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

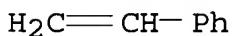
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-38
 ICS H01M004-62

INCL 429218100; 429217000; 429232000; 429231900

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST **lithium sulfur battery cathode**

IT Synthetic rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)
 (butadiene-ethylene-styrene; **cathode for**
lithium-sulfur battery of high energy
 d.)

IT Synthetic rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)
 (butene-ethylene-styrene; **cathode for lithium**
-sulfur battery of high energy d.)

IT **Battery cathodes**

Conducting polymers
 (**cathode for lithium-sulfur**
battery of high energy d.)

IT **Polyoxyalkylenes, uses**

Styrene-butadiene rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)

- (cathode for lithium-sulfur
battery of high energy d.)
- IT Primary batteries
(lithium; cathode for lithium-sulfur battery of high energy d.)
- IT Carbon black, uses
Metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; cathode for lithium-sulfur battery of high energy d.)
- IT 7440-44-0, Activated carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(activated, powder; cathode for lithium-sulfur battery of high energy d.)
- IT 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses
7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, compd.
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)
- IT 9000-11-7D, Cellulose, carboxymethyl ether, alkali metal salt
9003-05-8, Polyacrylamide 9003-20-7, Polyvinylacetate 9003-39-8,
Polyvinylpyrrolidone 9004-32-4, Cellulose, carboxymethyl ether,
sodium salt 9004-34-6D, Cellulose, compd. 9004-64-2D,
Hydroxypropylcellulose, alkali metal salt 9004-67-5D,
Methylcellulose, alkali metal salt 9078-35-7, Methylcellulose,
sodium salt 9086-60-6, Cellulose, carboxymethyl ether, ammonium
salt 25322-68-3, Peo 26590-05-6, Acrylamide-
diallyldimethylammonium chloride copolymer 54848-04-3, Cellulose,
carboxymethyl ether, potassium salt 55962-76-0, Cellulose,
carboxymethyl ether, lithium salt 104921-80-4,
Hydroxypropylcellulose, sodium salt 564455-79-4, Hydroxypropyl
methyl cellulose, ammonium salt 564455-80-7, Hydroxypropyl
cellulose, lithium salt 564455-81-8, Hydroxypropyl cellulose,
potassium salt 564455-82-9 564455-83-0, Methyl cellulose,
potassium salt 564455-84-1, Methyl cellulose, ammonium salt
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, cathode for lithium-sulfur battery of high energy d.)

L54 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:547230 HCAPLUS
 DOCUMENT NUMBER: 139:247972

TITLE: Rechargeable lithium sulfur
 battery. I. Structural change of
 sulfur cathode during
 discharge and charge
 AUTHOR(S): Cheon, Sang-Eun; Ko, Ki-Seok; Cho, Ji-Hoon; Kim,
 Sun-Wook; Chin, Eog-Yong; Kim, Hee-Tak
 CORPORATE SOURCE: New Turn Energy Company Limited, Suwon, 442-380,
 S. Korea
 SOURCE: Journal of the Electrochemical Society (2003), 150(6), A796-A799
 CODEN: JESOAN; ISSN: 0013-4651
 PUBLISHER: Electrochemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The structural change of the **sulfur cathode**
 during the electrochem. reaction of a lithium
sulfur battery employing 0.5M LiCF₃SO₃-
 tetra(éthylène glycol) di-Me ether (TEGDME) was studied by SEM, XRD,
 and wave dispersive spectroscopy (WDS). The discharge process of
 the **lithium sulfur** cell could be divided into
 the 1st discharge region (2.4-2.1 V) where the redn. of elemental
 sulfur to form sol. polysulfides and further redn. of the sol.
 polysulfide occur, and the 2nd discharge region (2.1-1.5 V) where
 the sol. polysulfides are reduced to form a nonuniform Li₂S solid
 film covered over the carbon matrix. Also the charge of
lithium sulfur cell leads to the conversion from
 Li₂S to the sol. polysulfide, resulting in the removal of Li₂S layer
 formed on carbon matrix. However, the oxidn. of the sol.
 polysulfide to solid sulfur hardly occurs and little Li₂S is left on
 carbon matrix even at 100% depth of charge.
 IT 7704-34-9, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (composite cathode with super P and
 poly(butadiene-co-styrene); structural change of **sulfur**
 cathode during discharge and charge of rechargeable
 lithium sulfur battery)
 RN 7704-34-9 HCAPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 12136-58-2, Lithium sulfide (Li₂S)
 RL: FMU (Formation, unclassified); PRP (Properties); RCT (Reactant);
 FORM (Formation, nonpreparative); RACT (Reactant or reagent)
 (structural change of **sulfur cathode** during

discharge and charge of rechargeable lithium
sulfur battery)

RN 12136-58-2 HCPLUS

CN Lithium sulfide (Li2S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, polymers
 $\text{, binder for composite cathode of sulfur and}$
 $\text{super P; structural change of sulfur cathode}$
 $\text{during discharge and charge of rechargeable lithium}$
sulfur battery)

RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

$\text{H}_2\text{C}=\text{CH—CH=CH}_2$

CM 2

CRN 100-42-5

CMF C8 H8

$\text{H}_2\text{C}=\text{CH—Ph}$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 76

ST rechargeable lithium **sulfur battery**

cathode discharge charge soluble polysulfide; SEM XRD WDS
battery cathode structure change

IT **Styrene-butadiene rubber, uses**

RL: DEV (Device component use); USES (Uses)
(polymers, binder for composite cathode of
sulfur and super P; structural change of sulfur

cathode during discharge and charge of rechargeable lithium sulfur battery)

IT Battery cathodes

Electric potential

Secondary batteries

(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 7440-44-0, Super P, uses

RL: DEV (Device component use); USES (Uses)

(activated, composite cathode with sulfur and poly(butadiene-co-styrene); structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)

(composite cathode with super P and poly(butadiene-co-styrene); structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 143-24-8, Tetra(ethylene glycol) di methyl ether 33454-82-9

RL: DEV (Device component use); USES (Uses)

(electrolyte; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 7439-93-2, Lithium, uses

RL: DEV (Device component use); USES (Uses)

(foil, anode; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 9003-07-0, Celgard 3501

RL: DEV (Device component use); USES (Uses)

(separator; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 7440-50-8, Copper, uses

RL: DEV (Device component use); USES (Uses)

(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 9080-49-3, Sulfide ((Sx)2-)

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)

IT 12136-58-2, Lithium sulfide (Li₂S)

RL: FMU (Formation, unclassified); PRP (Properties); RCT (Reactant);

FORM (Formation, nonpreparative); RACT (Reactant or reagent)
 (structural change of **sulfur cathode** during
 discharge and charge of rechargeable lithium
sulfur battery)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (**styrene-butadiene** rubber, **polymers**
 , binder for composite **cathode** of **sulfur** and
 super P; structural change of **sulfur cathode**
 during discharge and charge of rechargeable lithium
sulfur battery)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L54 ANSWER 17 OF 20 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:473082 HCPLUS
 DOCUMENT NUMBER: 139:24151
 TITLE: Preparation of **cathode** for
lithium sulfur battery
 INVENTOR(S): Choi, Jae-Young; Yoo, Duck-Young; Lee, Jong-Ki;
 Kim, Min-Seuk
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003113627	A1	20030619	US 2002-259293	200209 30
US 6908706	B2	20050621		
KR 2003050475	A	20030625	KR 2001-80906	200112 18
CN 1427491	A	20030702	CN 2002-144424	200209 27
JP 2003208894	A2	20030725	JP 2002-366929	200212 18
JP 3677267	B2	20050727		

PRIORITY APPLN. INFO.:

KR 2001-80906

A

200112

18

AB Provided is a cathode including a current collector, and a cathode active material layer laminated on the current collector, a method of making the cathode, and a battery including the cathode. The cathode active material includes particles having a core-shell structure with a sulfur-contg. active material core, a conductor coating disposed on a surface of the active material core, and a binder coating disposed on the conductor coating. A high-performance **lithium sulfur battery** can be manufd. using the cathode, since sufficient bondability can be attained with only a small amt. of a binder.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder coating; prepn. of
cathode for lithium sulfur
battery)

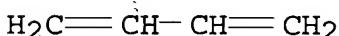
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

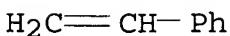
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58
 ICS H01M004-62

INCL 429218100; 429232000; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **cathode prepn lithium sulfur**
battery

- IT Fluoropolymers, uses
Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder coating; prepn. of **cathode for lithium sulfur battery**)
- IT Battery cathodes
Coating materials
(prepn. of **cathode for lithium sulfur battery**)
- IT Polysulfides
RL: DEV (Device component use); USES (Uses)
(prepn. of **cathode for lithium sulfur battery**)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
24937-79-9, Polyvinylidene fluoride 25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(binder coating; prepn. of **cathode for lithium sulfur battery**)
- IT 7440-44-0, Carbon, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; prepn. of **cathode for lithium sulfur battery**)
- IT 9002-88-4, Polyethylene
RL: MOA (Modifier or additive use); USES (Uses)
(high d.; prepn. of **cathode for lithium sulfur battery**)
- IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
Dioxolane 1314-23-4, Zirconium oxide (ZrO₂), uses 7429-90-5,
Aluminum, uses 7704-34-9, Sulfur, uses 21324-40-3,
Lithium hexafluorophosphate 33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(prepn. of **cathode for lithium sulfur battery**)
- IT 75-05-8, Acetonitrile, uses 109-99-9, Thf, uses 872-50-4,
n-Methyl-2-pyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; prepn. of **cathode for lithium sulfur battery**)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder coating; prepn. of
cathode for lithium sulfur battery)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L54 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:300501 HCAPLUS
 DOCUMENT NUMBER: 138:290456
 TITLE: Method for preparation of cathode active material composition for **lithium-sulfur battery**
 INVENTOR(S): Lee, Jea-Woan; Park, Seung-Hee
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003073000	A1	20030417	US 2002-156796	200205 30
US 7018739	B2	20060328		
KR 2003032364	A	20030426	KR 2001-64096	200110 17
JP 2003123739	A2	20030425	JP 2002-175642	200206 17
CN 1412870	A	20030423	CN 2002-125136	200206 28
PRIORITY APPLN. INFO.:			KR 2001-64096	A 200110 17

AB A pos. active material includes a sulfur compd., a conductive agent adhered to the sulfur compd., and a binder including at least one polymer to bind the conductive agent to the sulfur compd. The sulfur compd. comprises one or more compd. selected from sulfur, Li₂Sn (n≥1), org. sulfur compd., and (C₂Sx)_n, where x = 2.5-50, and n≥2.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
 (abs rubber, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

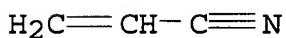
RN 9003-56-9 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

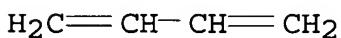
CMF C3 H3 N



CM 2

CRN 106-99-0

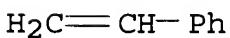
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder; method for prepn. of cathode active
material compn. for **lithium-sulfur**
battery)

RN 9003-18-3 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

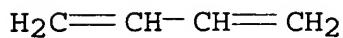
CM 1

CRN 107-13-1

CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6

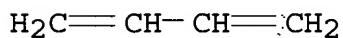
IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

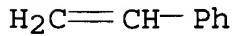
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6

CM 2

CRN 100-42-5
CMF C8 H8

IT 26835-21-2, Butadiene-ethylene-styrene copolymer

RL: MOA (Modifier or additive use); USES (Uses)
(sulfonated, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

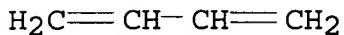
RN 26835-21-2 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene (9CI) (CA

INDEX NAME)

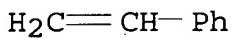
CM 1

CRN 106-99-0
CMF C4 H6



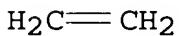
CM 2

CRN 100-42-5
CMF C8 H8



CM 3

CRN 74-85-1
CMF C2 H4



IC ICM H01M004-58
ICS H01M004-62
INCL 429218100; 429232000; 429231950; 429217000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST cathode active material compn **lithium sulfur**
battery
IT **ABS** rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polymers, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Polyvinyl butyrals
Styrene-butadiene rubber, uses

- IT RL: MOA (Modifier or additive use); USES (Uses)
 (binder; method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT Battery cathodes
 (method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT Carbon black, uses
 Fluoropolymers, uses
 Polyoxyalkylenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9003-56-9
 RL: MOA (Modifier or additive use); USES (Uses)
 (abs rubber, binder; method for prepn. of cathode
 active material compn. for **lithium-sulfur
 battery**)
- IT 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether
 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl
 chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7,
 Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate
 copolymer 24937-79-9, Polyvinylidene fluoride 25014-41-9,
 Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone
 copolymer 25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-)
 homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-)
 homopolymer, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (binder; method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compd. 74432-42-1,
 Lithium polysulfide
 RL: DEV (Device component use); USES (Uses)
 (method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 67-63-0, Isopropyl alcohol, uses 75-05-8, Acetonitrile, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9003-18-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (nitrile rubber, binder; method for prepn. of cathode active
 material compn. for **lithium-sulfur
 battery**)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

IT 26835-21-2, Butadiene-ethylene-styrene copolymer

RL: MOA (Modifier or additive use); USES (Uses)
 (sulfonated, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L54 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:28581 HCAPLUS

DOCUMENT NUMBER: 128:104357

TITLE: Solid state lithium batteries

INVENTOR(S): Takada, Kazunori; Fujino, Makoto; Iwamoto, Kazuya; Kondo, Shigeo

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10003943	A2	19980106	JP 1996-154606	199606 14
JP 3297595	B2	20020702	JP 1996-154606	199606 14

PRIORITY APPLN. INFO.:

AB The batteries have a Li ion conductive solid electrolyte between a pair of electrodes, where ≥ 1 of the electrodes is ≤ 0.2 mm thick, the electrolyte is ≤ 0.5 mm thick, and the binder for the electrode or the electrolyte is a polymer contg. SO₃ or SO₃-electron donor adduct groups added to C:C double bonds in the polymer mol.

IT 9003-55-8DP, Butadiene-styrene copolymer, hydrogenated, reaction products with

dioxane-sulfur trioxide adducts

RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)

(polymer binders contg. sulfur trioxide groups for electrodes and electrolytes in solid state lithium batteries)

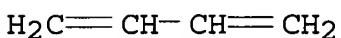
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

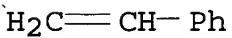
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST solid electrolyte lithium battery polymer binder; electrode polymer binder lithium battery; **sulfur** trioxide adduct polymer lithium battery

IT Secondary batteries

(polymer binders contg. **sulfur** trioxide groups for solid state lithium batteries)

IT 9003-55-8DP, Butadiene-styrene

copolymer, hydrogenated, reaction products with dioxane-sulfur trioxide adducts 25034-71-3DP, Dicyclopentadiene-ethylene-propylene copolymer, reaction products with dioxane-sulfur trioxide adducts 25038-32-8DP, Isoprene-styrene copolymer, reaction products with dioxane-sulfur trioxide adducts 54287-50-2DP, reaction products with double bond contg. polymers 105729-79-1DP, Isoprene-styrene block copolymer, reaction products with dioxane-sulfur trioxide adducts

RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation);

PROC (Process); USES (Uses)

(polymer binders contg. sulfur trioxide groups for electrodes and electrolytes in solid state lithium batteries)

L54 ANSWER 20 OF 20 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:28568 HCPLUS
 DOCUMENT NUMBER: 128:117313
 TITLE: Molded electrodes for lithium batteries
 INVENTOR(S): Takata, Kazunori; Iwamoto, Kazuya; Kondo, Shigeo; Takeuchi, Yasumasa; Masaka, Fusazumi; Ishikawa, Katsuhiro
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Japan Synthetic Rubber Co., Ltd.
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10003926	A2	19980106	JP 1996-154621	199606 14
JP 3529943	B2	20040524	JP 1996-154621	199606 14
PRIORITY APPLN. INFO.:				

AB The electrodes contain polymers, which have SO₃ or SO₃-electron donor adduct attached to C:C double bonds in the polymer mol. and can be electrochem. oxidized and reduced in a Li⁺ conductive electrolyte.

IT 9003-55-8D, Butadiene-styrene copolymer, reaction products with sulfur trioxide-dioxane adducts

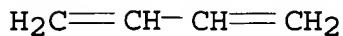
RL: DEV (Device component use); USES (Uses)
 (binders from polymers contg. sulfur trioxide or sulfur trioxide-electron donor adduct on double bonds for secondary lithium battery electrodes)

RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

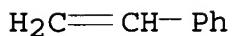
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-62
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery electrode sulfur
trioxide polymer; battery electrode sulfur
trioxide contg polymer
IT 123-91-1D, Dioxane, sulfur trioxide adducts, reaction products with
double bond contg. polymers 7446-11-9D, Sulfur trioxide, reaction
products with double bond contg. polymers, uses 7782-42-5,
Graphite, uses 9003-55-8D, Butadiene-
styrene copolymer, reaction products with sulfur
trioxide-dioxane adducts 11113-63-6, Graphite fluoride
12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium
manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide
(CoLiO₂) 25034-71-3D, Dicyclopentadiene-ethylene-propylene
copolymer, reaction products with sulfur trioxide-dioxane adducts
25038-32-8D, Isoprene-styrene copolymer, reaction products with
sulfur trioxide-dioxane adducts 120479-61-0, Aluminum lithium
titanium phosphate [Al_{0.3}Li_{1.3}Ti_{1.7}(PO₄)₃]
RL: DEV (Device component use); USES (Uses)
(binders from polymers contg. sulfur trioxide or sulfur
trioxide-electron donor adduct on double bonds for secondary
lithium battery electrodes)

=> d 155 ibib abs hitstr hitind

L55 ANSWER 1 OF 1 HCPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:37229 HCPLUS
DOCUMENT NUMBER: 144:111317

TITLE: New organic/inorganic composite porous film for electrochemical device
 INVENTOR(S): Yong, Hyun-Hang; Lee, Sang-Young; Kim, Seok-Koo; Ahn, Soon-Ho; Suk, Jung-Don
 PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea
 SOURCE: PCT Int. Appl., 30 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE		
WO 2006004366	A1	20060112	WO 2005-KR2133	200507 05		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	US 2006008700	A1	20060112	US 2005-175881	200507 06
PRIORITY APPLN. INFO.:			KR 2004-52638	A	200407 07	
			KR 2004-70097	A	200409 02	

AB Disclosed is an org./inorg. composite porous film comprising: (a) a porous substrate having pores; and (b) an active layer formed by coating a surface of the substrate or a part of the pores in the substrate with a mixt. of inorg. particles and a **binder** polymer, wherein the inorg. particles in the active layer are interconnected among themselves and are fixed by the **binder**

polymer, and interstitial vols. among the inorg. particles form a pore structure. A method for manufg. the same film and an electrochem. device including the same film are also disclosed. An electrochem. device comprising the org./inorg. composite porous film shows improved safety and quality, simultaneously.

IT 9011-17-0, Hexafluoropropylene-vinylidene **fluoride copolymer**

RL: MOA (Modifier or additive use); USES (Uses)
(glass, lithium phosphide sulfide; org./inorg. composite porous film for electrochem. device)

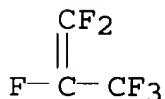
RN 9011-17-0 HCPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

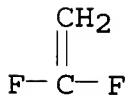
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



IT 7704-34-9, **Sulfur**, uses

RL: DEV (Device component use); USES (Uses)
(glass, lithium silicon sulfide; org./inorg. composite porous film for electrochem. device)

RN 7704-34-9 HCPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

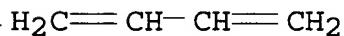
S

IT 9003-56-9, Acrylonitrile-butadiene-styrene
 copolymer 87465-25-6, Trichloroethylene-vinylidene
 fluoride copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (org./inorg. composite porous film for electrochem. device)
 RN 9003-56-9 HCPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
 (9CI) (CA INDEX NAME)

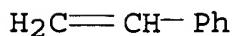
CM 1

CRN 107-13-1
 CMF C3 H3 N

CM 2

CRN 106-99-0
 CMF C4 H6

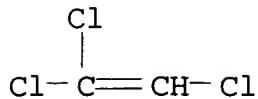
CM 3

CRN 100-42-5
 CMF C8 H8

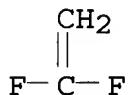
RN 87465-25-6 HCPLUS
 CN Ethene, trichloro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX
 NAME)

CM 1

CRN 79-01-6
 CMF C2 H Cl3



CM 2

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M002-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST safety **electrochem cell** org inorg composite
 porous film; **battery** org inorg composite porous film
 IT Secondary **batteries**
 (lithium; org./inorg. composite porous film for electrochem.
 device)
 IT 9011-17-0, Hexafluoropropylene-vinylidene **fluoride**
copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (glass, lithium phosphide sulfide; org./inorg. composite porous
 film for electrochem. device)
 IT 7440-21-3, Silicon, uses 7704-34-9, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (glass, lithium silicon sulfide; org./inorg. composite
 porous film for electrochem. device)
 IT 57-50-1D, Sucrose, Cyanoethyl ethers 9000-11-7, Carboxymethyl
 cellulose 9002-89-5D, Polyvinyl alcohol, Cyanoethyl ethers
 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone
 9003-56-9, Acrylonitrile-butadiene-styrene
copolymer 9004-35-7 9004-39-1, Cellulose acetate
 propionate 9004-41-5, Cyanoethyl cellulose 9011-14-7, PMMA
 9057-02-7, Pullulan 24937-78-8, Ethylene-vinyl acetate copolymer
 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 77466-56-9,
 Cyanoethylpullulan 87465-25-6, Trichloroethylene-
 vinylidene **fluoride** **copolymer**
 RL: MOA (Modifier or additive use); USES. (Uses)

(org./inorg. composite porous film for electrochem. device)
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

=> d 160 ibib abs hitstr hitind 1-2

L60 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1003783 HCAPLUS
 DOCUMENT NUMBER: 143:269683
 TITLE: Secondary nonaqueous electrolyte battery
 INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;
 Miyake, Masahide; Fujimoto, Masahisa
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005251516	A2	20050915	JP 2004-58933	200403 03
PRIORITY APPLN. INFO.:			JP 2004-58933	200403 03

AB The battery has a **cathode** contg. S as active mass and a SBR **binder**, an anode contg. a Li-intercalating material; and a metal halide added nonaq. electrolyte.

IT 9002-84-0, PTFE

RL: DEV (Device component use); USES (Uses)
 (electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

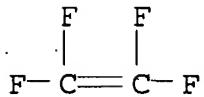
RN 9002-84-0 HCAPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; electrolytes contg. metal halide
 additives and cathodes contg. SBR **binders** for secondary
 batteries)

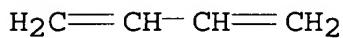
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

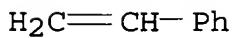
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-58; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery sulfur cathode** SBR**binder**; battery electrolyte additive metal halide

IT Battery electrolytes

Secondary batteries

(electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT Fluoropolymers, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT 110-71-4 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses
 7704-34-9, Sulfur, uses 9002-84-0, PTFE 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT 7784-23-8, Aluminum iodide 10377-58-9, Magnesium iodide
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; electrolytes contg. metal halide
 additives and cathodes contg. SBR **binders** for secondary
 batteries)

L60 ANSWER 2 OF 2 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:920666 HCPLUS
 DOCUMENT NUMBER: 142:180334
 TITLE: Preparation of **sulfur**-based
cathodes for **batteries**
 INVENTOR(S): Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun; Kim,
 Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon, Chang
 Wi
 PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
KR 2002068783	A	20020828	KR 2001-9050	200102 22
PRIORITY APPLN. INFO.:			KR 2001-9050	200102 22

AB This cathode has increased contact area between C and S, it
 maintains uniform contact with the carbon, thereby increasing the
 reaction velocity during discharging. The method entails dispersing
 C and a **binder** into a solvent to prep. a slurry; coating
 the slurry on a current collector and drying it to prep. a C matrix
 on the current collector; dipping the current collector into a soln.

contg. S or a S melt to infiltrate S into the C matrix; and drying the S-infiltrated C matrix. The **binder** is selected from PVdF, PVdF-HFP **copolymer**, **butadiene-styrene copolymer**, **acrylonitrile-butadiene-styrene copolymer**, **polytetrafluoroethylene**, CMC, **polyethylene** and **polypropylene**. The current collector is selected from Al, etched Al, Ni, Cu and stainless steel. The solvent is selected from H₂O, N-methylpyrrolidone, MeCN, EtOH, MeOH and isoPr alc.

IT 9002-84-0, **Polytetrafluoroethylene 9003-55-8**,

Butadiene-styrene copolymer 9003-56-9,

Acrylonitrile-butadiene-styrene copolymer

9011-17-0 24937-79-9, PVdF

RL: DEV (Device component use); USES (Uses)

(**sulfur-based cathodes for batteries with**)

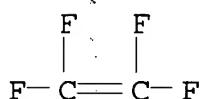
RN 9002-84-0 HCPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



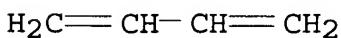
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



RN 9003-56-9 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

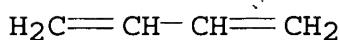
CMF C3 H3 N



CM 2

CRN 106-99-0

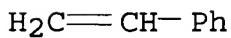
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



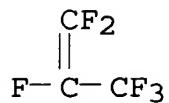
RN 9011-17-0 HCPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
(9CI) (CA INDEX NAME)

CM 1

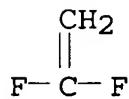
CRN 116-15-4

CMF C3 F6



CM 2

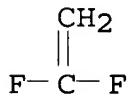
CRN 75-38-7
 CMF C2 H2 F2



RN 24937-79-9 HCPLUS
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
 CMF C2 H2 F2



IC ICM H01M004-96
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST sulfur carbon cathode battery
 IT Battery cathodes
 Primary batteries
 Secondary batteries
 (prepn. of sulfur-based cathodes for
 batteries)
 IT Fluoropolymers, uses
 RL: DEV (Device component use); USES (Uses)
 (sulfur-based cathodes for batteries
 with)
 IT 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (prepn. of sulfur-based cathodes for
 batteries)

IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, 2-Propanol, uses 75-05-8, Acetonitrile, uses 872-50-4, N-Methylpyrrolidone, uses 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7732-18-5, Water, uses 9002-84-0, Polytetrafluoroethylene 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-55-8, Butadiene-styrene copolymer 9003-56-9, Acrylonitrile-butadiene-styrene copolymer 9011-17-0 12597-68-1, Stainless steel, uses 24937-79-9, PVdF
 RL: DEV (Device component use); USES (Uses)
 (sulfur-based cathodes for batteries with)

=> d 161 ibib abs hitstr hitind 1-3

L61 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1129921 HCAPLUS
 DOCUMENT NUMBER: 143:370132
 TITLE: Lithium ion secondary batteries and their manufacture
 INVENTOR(S): Kato, Kiyomi; Inoue, Kaoru
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
-----	-----	-----	-----	-----
JP 2005294139	A2	20051020	JP 2004-109806	200404 02
PRIORITY APPLN. INFO.:			JP 2004-109806	200404 02

AB The battery comprises (a) a lithium mixed oxide cathode, (b) an anode, (c) a separator, (d) a nonaq. electrolyte soln., and (e) a porous film formed on the surface(s) of the cathode or the anode. The said porous film consists of inorg. particles and binders with the particles on the surface side having larger size than those on the side contacting the electrode. Preferably, the size of the particles in the surface

part is 1-3 μm and that in the part nearest to the electrode is 0.1-0.5 μm . The batteries have excellent resistance to short circuit and heat.

IT 9003-18-3D, hydrogenated

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(nitrile rubber, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

RN 9003-18-3 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

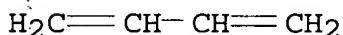
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IC ICM H01M010-40

ICS H01M002-16; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Nitrile rubber, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(hydrogenated, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

IT 9003-18-3D, hydrogenated

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(nitrile rubber, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

L61 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:231364 HCAPLUS
 DOCUMENT NUMBER: 130:239909
 TITLE: Electrode for secondary nonaqueous electrolyte batteries
 INVENTOR(S): Goto, Shinya; Urushibara, Masaru; Kosaka, Atsushi; Kato, Fumio
 PATENT ASSIGNEE(S): Nippon Denso Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11097024	A2	19990409	JP 1997-258522	199709 24
PRIORITY APPLN. INFO.:			JP 1997-258522	199709 24

AB The electrodes have an active mass bonded by a crosslinked elastomer **binder**. The elastomers are crosslinked by their double bonds by S or S compds. or an org. peroxide.

IT 9003-17-2

RL: DEV (Device component use); USES (Uses)
 (butadiene rubber, compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

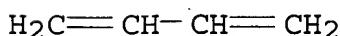
RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IT 9003-18-3

RL: DEV (Device component use); USES (Uses)

(nitrile rubber, compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

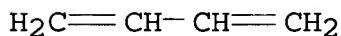
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IC ICM H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode crosslinked elastomer **binder**;

sulfur crosslinked elastomer **binder**

battery electrode; peroxide crosslinked elastomer
binder battery electrode

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(compns. of anodes contg. sulfur or peroxide crosslinked
elastomer **binders** for secondary nonaq. batteries)

IT Battery electrodes

(compns. of electrodes contg. sulfur or peroxide crosslinked
elastomer **binders** for secondary nonaq. batteries)

IT Butadiene rubber, uses

Nitrile rubber, uses

RL: DEV (Device component use); USES (Uses)

(compns. of electrodes contg. sulfur or peroxide crosslinked
elastomer **binders** for secondary nonaq. batteries)

IT Synthetic rubber, uses

RL: DEV (Device component use); USES (Uses)

(sulfur or peroxide crosslinked elastomer **binders** for
electrodes in secondary nonaq. batteries)

- IT 9003-17-2
 RL: DEV (Device component use); USES (Uses)
 (butadiene rubber, compns. of electrodes contg. sulfur or
 peroxide crosslinked elastomer **binders** for secondary
 nonaq. batteries)
- IT 57-11-4, Stearic acid, uses 120-78-5, Mbts 1314-13-2, Zinc
 oxide, uses 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (compns. of electrodes contg. sulfur or peroxide crosslinked
 elastomer **binders** for secondary nonaq. batteries)
- IT 9003-18-3
 RL: DEV (Device component use); USES (Uses)
 (nitrile rubber, compns. of electrodes contg. sulfur or peroxide
 crosslinked elastomer **binders** for secondary nonaq.
 batteries)

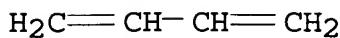
L61 ANSWER 3 OF 3 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1985:169732 HCPLUS
 DOCUMENT NUMBER: 102:169732
 TITLE: Plate-type beta" alumina electrolytes for an
 advanced sodium-sulfur cell design
 AUTHOR(S): Pett, Robert A.; Theodore, Ares N.; Tennenhouse,
 Gerald J.; Runkle, Franklin D.
 CORPORATE SOURCE: Ford Motor Co., Dearborn, MI, 48121, USA
 SOURCE: American Ceramic Society Bulletin (1985), 64(4),
 589-92
 CODEN: ACSBA7; ISSN: 0002-7812
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB A process was developed for the prepn. of plate-type
 β' -alumina membranes (for Na- S batteries)
 by compression molding of a **polymer** (styrene-
 butadiene-based) **binder**/ceramic mixt. and
 subsequent processing leading to a sintered, dense ceramic. The
 properties of the ceramic prepd. by this process are comparable to
 material prepd. by the traditional method of isostatic pressing and
 sintering as indicated by strength, microstructure, cond., and cell
 behavior.

- IT 9003-55-8
 RL: USES (Uses)
 (rubber, butadiene-styrene; **binder**, in manuf. of
 alumina electrolytes for advanced sodium-**sulfur**
battery)
- RN 9003-55-8 HCPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

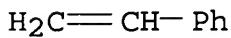
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 57
ST sodium **sulfur** battery alumina electrolyte;
styrene butadiene **binder** alumina electrolyte
IT Rubber, butadiene-styrene, uses and miscellaneous
RL: USES (Uses)
(**binder**, in manuf. of alumina electrolytes for advanced
sodium-**sulfur** battery)
IT **Batteries**, secondary
(sodium-**sulfur**, alumina electrolyte for advanced
design, plate-type)
IT 9003-55-8
RL: USES (Uses)
(rubber, butadiene-styrene; **binder**, in manuf. of
alumina electrolytes for advanced sodium-**sulfur**
battery)

=> d 162 ibib hitstr hitind 1-31

L62 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:481472 HCAPLUS
DOCUMENT NUMBER: 145:66249
TITLE: Preparation of lithium-ion **battery**
positive electrode material
with high specific capacity
INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Pengcheng

PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
 SOURCE: Faming Zhanli Shengqing Gongkai Shuomingshu, 12 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
CN 1773753	A	20060517	CN 2004-10088546	200411 08
PRIORITY APPLN. INFO.:			CN 2004-10088546	200411 08

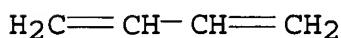
IT 12136-58-2, Lithium sulfide
 RL: TEM (Technical or engineered material use); USES (Uses)
 (prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
 RN 12136-58-2 HCPLUS
 CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-55-8
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber; prepn. of lithium-ion **battery**
pos. **electrode** material with high specific
 capacity)
 RN 9003-55-8 HCPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
 CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium ion secondary **battery pos**
electrode material manuf
 IT Secondary **batteries**
 (lithium; prepn. of lithium-ion **battery pos**.
electrode material with high specific capacity)
 IT **Battery cathodes**
 Calcination
 Coating process
 Coprecipitation
 (prepn. of lithium-ion **battery pos**.
electrode material with high specific capacity)
 IT Fluoropolymers, uses
 Polyoxyalkylenes, uses
 Styrene-butadiene rubber, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (prepn. of lithium-ion **battery pos**.
electrode material with high specific capacity)
 IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP
 (Physical, engineering or chemical process); PROC (Process); USES
 (Uses)
 (prepn. of lithium-ion **battery pos**.
electrode material with high specific capacity)
 IT 71-48-7, Cobalt acetate 373-02-4, Nickel acetate 554-13-2,
 Lithium carbonate 1310-65-2, Lithium hydroxide 7786-81-4, Nickel
 sulfate 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate
 10141-05-6, Cobalt nitrate 13138-45-9, Nickel nitrate
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (prepn. of lithium-ion **battery pos**.
electrode material with high specific capacity)
 IT 1303-86-2, Boron trioxide, uses 1309-37-1, Ferric oxide, uses
 1309-48-4, Magnesium oxide, uses 1314-23-4, Zirconium dioxide,
 uses 7631-86-9, Silicon dioxide, uses 7789-24-4, Lithium
 fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5,
 Polyvinyl alcohol 9003-05-8, Polyacrylamide 9011-17-0,

Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3, Lithium phosphate 12007-60-2, Lithium borate 12057-24-8, Lithium oxide, uses 12136-58-2, Lithium sulfide 12627-14-4, Lithium silicate 13463-67-7, Titanium dioxide, uses 18282-10-5, Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3, Polyethylene oxide 50927-81-6, Silicon sulfide 193214-44-7, Aluminum cobalt lithium nickel oxide (Al0.15Co0.1LiNi0.75O2) 891484-55-2

RL: TEM (Technical or engineered material use); USES (Uses)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber; prepn. of lithium-ion **battery pos.** **electrode** material with high specific capacity)

L62 ANSWER 2 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:481469 HCPLUS

DOCUMENT NUMBER: 145:66248

TITLE: Manufacture of lithium-ion secondary
battery with positive
electrode made of nickel-based active
material

INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Pengcheng

PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhanli Shengqing Gongkai Shuomingshu, 13
pp.

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
CN 1773763	A	20060517	CN 2004-10088545	200411 08

PRIORITY APPLN. INFO.: CN 2004-10088545

200411
08

IT 12136-58-2, Lithium sulfide

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-55-8

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(styrene-butadiene rubber; manuf. of lithium-ion secondary
battery with **pos. electrode** made of
nickel-based active material)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C₄ H₆

H₂C=CH—CH=CH₂

CM 2

CRN 100-42-5

CMF C₈ H₈

H₂C=CH—Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ion secondary **battery** manuf **pos**

electrode

IT Secondary **batteries**

(lithium; manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT **Battery cathodes**

Calcination

- Coating process
- Coprecipitation
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT Carbon black, uses
 - RL: DEV (Device component use); USES (Uses)
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT Fluoropolymers, uses
 - Polyoxyalkylenes, uses
 - Styrene-butadiene rubber, uses
 - RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT 7440-44-0, Super P, uses
 - RL: DEV (Device component use); USES (Uses)
 - (activated; manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide
 - RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT 373-02-4, Nickel acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 2180-18-9, Manganese acetate 5931-89-5, Cobalt acetate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate
 - RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT 7782-42-5, Graphite, uses
 - RL: DEV (Device component use); USES (Uses)
 - (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)
- IT 1303-86-2, Boron trioxide, uses 1309-48-4, Magnesium oxide, uses 1313-13-9, Manganese dioxide, uses 1314-13-2, Zinc oxide, uses

1314-23-4, Zirconium dioxide, uses 1314-62-1, Vanadium pentoxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 7784-30-7, Aluminum phosphate 7789-24-4, Lithium fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9005-25-8, Starch, uses 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3, Lithium phosphate 12057-24-8, Lithium oxide, uses 12136-58-2, Lithium sulfide 12627-14-4, Lithium silicate 12676-27-6 13463-67-7, Titanium dioxide, uses 18282-10-5, Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3, Polyethylene oxide 50927-81-6, Silicon sulfide 891484-60-9
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)

IT 9003-55-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(styrene-butadiene rubber; manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)

L62 ANSWER 3 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1190833 HCPLUS

DOCUMENT NUMBER: 144:68501

TITLE: Cyclin T1 Expression Is Regulated by Multiple Signaling Pathways and Mechanisms during Activation of Human Peripheral Blood Lymphocytes

AUTHOR(S): Marshall, Renee M.; Salerno, Dominic; Garriga, Judit; Grana, Xavier

CORPORATE SOURCE: Fels Institute for Cancer Research and Molecular Biology and Department of Biochemistry, Temple University School of Medicine, Philadelphia, PA, 19140, USA

SOURCE: Journal of Immunology (2005), 175(10), 6402-6411
 CODEN: JOIMA3; ISSN: 0022-1767

PUBLISHER: American Association of Immunologists

DOCUMENT TYPE: Journal

LANGUAGE: English

CC 15-10 (Immunochemistry)

REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 4 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:99769 HCPLUS

DOCUMENT NUMBER: 142:201580
 TITLE: Method of preparation of anode active material
 for lithium secondary battery
 INVENTOR(S): Lee, Sung-Man; Lee, Heon Young; Hong, Moon Ki
 PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea; Kangwon National
 University Industry Cooperation Foundation
 SOURCE: PCT Int. Appl., 28 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005011030	A1	20050203	WO 2004-KR1914	200407 29
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
KR 2005013841	A	20050205	KR 2003-52422	200307 29
CA 2533863	AA	20050203	CA 2004-2533863	200407 29
EP 1652248	A1	20060503	EP 2004-774231	200407 29
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
PRIORITY APPLN. INFO.:			KR 2003-52422	A
				200307 29

WO 2004-KR1914

W

200407

29

IT 12136-58-2, Lithium sulfide (Li₂S)
 RL: DEV (Device component use); USES (Uses)
 (method of prepn. of anode active material for lithium secondary
battery)
 RN 12136-58-2 HCPLUS
 CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IC ICM H01M004-36
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST anode active material prepn lithium secondary **battery**
 IT Secondary batteries
 (lithium; method of prepn. of anode active material for lithium
 secondary **battery**)
 IT **Battery** anodes
 Formation enthalpy
 (method of prepn. of anode active material for lithium secondary
battery)
 IT Carbonaceous materials (technological products)
 RL: MOA (Modifier or additive use); USES (Uses)
 (method of prepn. of anode active material for lithium secondary
battery)
 IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
 12136-58-2, Lithium sulfide (Li₂S) 37220-89-6, Aluminum
 lithium oxide 140444-99-1, Aluminum lithium oxide sulfide (AlLiOS)
 RL: DEV (Device component use); USES (Uses)
 (method of prepn. of anode active material for lithium secondary
battery)
 IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-93-2,
 Lithium, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese,
 uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses
 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-31-5,
 Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses
 7440-42-8, Boron, uses 7440-47-3, Chromium, uses 7440-48-4,
 Cobalt, uses 7440-56-4, Germanium, uses 7440-62-2, Vanadium,
 uses 7440-65-5, Yttrium, uses 7440-67-7, Zirconium, uses
 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7723-14-0,
 Phosphorus, uses 7727-37-9, Nitrogen, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (method of prepn. of anode active material for lithium secondary

battery)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 5 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1038566 HCAPLUS
 DOCUMENT NUMBER: 142:25893
 TITLE: Secondary battery
 INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;
 Miyake, Masahide; Fujimoto, Masahisa
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

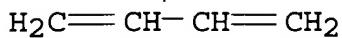
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004342575	A2	20041202	JP 2003-337866	200309 29
PRIORITY APPLN. INFO.:			JP 2003-122458	A 200304 25

IT 7704-34-9, Sulfur, uses
 RL: DEV (Device component use); USES (Uses)
 (secondary batteries contg. sulfur in
 cathodes and room-temp. molten salts in electrolytes)
 RN 7704-34-9 HCAPLUS
 CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; secondary batteries contg.
 sulfur in cathodes and room-temp. molten salts
 in electrolytes)
 RN 9003-55-8 HCAPLUS
 CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6

CM 2

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-58
 ICS H01M004-02; H01M004-38; H01M004-62; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary **battery cathode sulfur**
 electrolyte room temp molten salt
 IT Secondary **batteries**
 (secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)
 IT Fluoropolymers, uses
 Styrene-butadiene rubber, uses
 RL: DEV (Device component use); USES (Uses)
 (secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)
 IT 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane
 7439-93-2, Lithium, uses 7704-34-9, **Sulfur**, uses
 9002-84-0, Polytetrafluoroethylene 90076-65-6 268536-05-6,
 Trimethyl propyl ammonium bis(trifluoromethylsulfonyl) imide
 RL: DEV (Device component use); USES (Uses)
 (secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)
 IT 9003-55-8
 RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; secondary **batteries** contg.
sulfur in **cathodes** and room-temp. molten salts
 in electrolytes)

L62 ANSWER 6 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1037168 HCAPLUS
 DOCUMENT NUMBER: 142:24024
 TITLE: Long fiber-reinforced polypropylene-polyphenylene ether alloy material and its preparation and application
 INVENTOR(S): Yang, Guisheng; Li, Hong; Qin, Qingwu; Lu, Xuexing
 PATENT ASSIGNEE(S): Shanghai Genius Advanced Material Co., Ltd., Peop. Rep. China
 SOURCE: PCT Int. Appl., 24 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE		
-----	-----	-----	-----	-----		
WO 2004104089	A1	20041202	WO 2004-CN475	200405 12		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	CN 1548469	A	20041124	CN 2003-117089	200305 22
PRIORITY APPLN. INFO.:			CN 2003-117089	A		200305 22

IT 694491-73-1, Butadiene-styrene triblock copolymer

RL: MOA (Modifier or additive use); USES (Uses)
 (compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

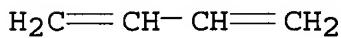
RN 694491-73-1 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

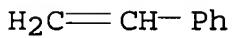
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 9003-56-9, ABS resin

RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

RN 9003-56-9 HCPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

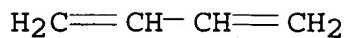
CMF C3 H3 N



CM 2

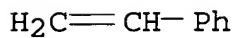
CRN 106-99-0

CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8



IT 694491-73-1D, hydrogenated

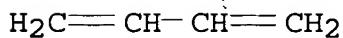
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

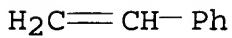
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM C08L023-12

CC 37-6 (Plastics Manufacture and Processing)

ST polypropylene polyphenylene ether blend long glass fiber reinforcement; creep impact resistance rigidity polypropylene polyphenylene ether blend; ABS resin polypropylene polyoxyphenylene blend; nylon polypropylene polyoxyphenylene blend

- IT 108-31-6, Maleic anhydride, uses 108-31-6D, Maleic anhydride, reaction products with polypropylene 9003-07-0D, Polypropylene, maleated 9011-13-6, Maleic anhydride-styrene copolymer
694491-73-1, Butadiene-styrene triblock copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)
- IT 9003-07-0, Polypropylene 9003-56-9, ABS resin
 25038-54-4, Nylon 6, properties
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
 (long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)
- IT **694491-73-1D**, hydrogenated **694491-73-1D**,
 hydrogenated, block, triblock
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber, compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 7 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:780200 HCAPLUS
 DOCUMENT NUMBER: 141:246156
 TITLE: All solid-state thin-film **battery** and application thereof
 INVENTOR(S): Ito, Shuji; Ugaji, Masaya; Mino, Shinji; Inaba, Junichi
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: U.S. Pat. Appl. Publ., 15 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004185336	A1	20040923	US 2004-778168	200402 17
JP 2004273436	A2	20040930	JP 2004-16261	200401

PRIORITY APPLN. INFO.:

JP 2003-39617

23

A

200302

18

IT 9003-17-2, Polybutadiene

RL: DEV (Device component use); USES (Uses)
(buffer layer material; all solid-state thin-film **battery** and application thereof)

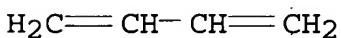
RN 9003-17-2 HCPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IT 12136-58-2, Lithium sulfide

RL: DEV (Device component use); USES (Uses)
(glass; all solid-state thin-film **battery** and application thereof)

RN 12136-58-2 HCPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IC ICM H01M006-46

ICS H01M002-24

INCL 429152000; 429160000; 429162000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** all solid state thin filmIT Solid state secondary **batteries**(all solid-state thin-film **battery** and application thereof)

IT Carbonaceous materials (technological products)

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(all solid-state thin-film **battery** and application thereof)

IT Polymerization

(plasma; all solid-state thin-film **battery** and

- application thereof)
- IT Epoxy resins, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (substrate; all solid-state thin-film **battery** and
 application thereof)
- IT 1314-62-1, Vanadium oxide (V2O5), uses 7439-93-2, Lithium, uses
 12031-65-1, Lithium nickel oxide linio2 12031-95-7, Lithium
 titanium oxide li4ti5o12 12057-17-9, Lithium manganese oxide
 limn2o4 12190-79-3, Cobalt lithium oxide colio2 174421-80-8,
 Cobalt lithium nitride Co0.4Li2.6N 477704-33-9, Lithium nitride
 oxide phosphide (Li2.9N0.46O3.3P)
 RL: DEV (Device component use); USES (Uses)
 (all solid-state thin-film **battery** and application
 thereof)
- IT 7440-22-4, Silver, uses 7440-57-5, Gold, uses 9002-88-4,
 Polyethylene 9003-07-0, Polypropylene 9003-17-2,
 Polybutadiene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl
 acrylate 9011-14-7, Polymethyl methacrylate 25012-93-5,
 Polycyclohexane 25053-22-9, Polybenzene 25322-69-4,
 Polypropylene oxide 26298-61-3, PolyHexamethyldisiloxane
 36427-13-1, Polyethane
 RL: DEV (Device component use); USES (Uses)
 (buffer layer material; all solid-state thin-film **battery**
 and application thereof)
- IT 7440-06-4, Platinum, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (coating; all solid-state thin-film **battery** and
 application thereof)
- IT 10377-52-3, Lithium phosphate 12136-58-2, Lithium sulfide
 13759-10-9, Silicon sulfide sis2
 RL: DEV (Device component use); USES (Uses)
 (glass; all solid-state thin-film **battery** and
 application thereof)

L62 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:512756 HCAPLUS
 DOCUMENT NUMBER: 141:57084
 TITLE: Sodium-sulphur **battery**
 having solid electrolyte tube containing
 β -alumina
 INVENTOR(S): Bito, Akihiro; Kawamura, Yoshifumi
 PATENT ASSIGNEE(S): NGK Insulators, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM.. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004178991	A2	20040624	JP 2002-344112	200211 27
PRIORITY APPLN. INFO.:				JP 2002-344112 200211 27

IC ICM H01M010-39
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST sodium **sulfur battery** solid electrolyte tube
 alumina
 IT Secondary batteries:
 (sodium-**sulfur battery** having solid
 electrolyte tube contg. β -alumina)
 IT 7440-23-5, Sodium, uses 7704-34-9, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (sodium-**sulfur battery** having solid
 electrolyte tube contg. β -alumina)
 IT 7440-37-1, Argon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (sodium-**sulfur battery** having solid
 electrolyte tube contg. β -alumina)
 IT 1344-28-1, Alumina, uses
 RL: DEV (Device component use); USES (Uses)
 (β -; sodium- **sulfur battery** having solid
 electrolyte tube contg. β -alumina)

L62 ANSWER 9 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:437556 HCAPLUS
 DOCUMENT NUMBER: 139:263214
 TITLE: Silicone as a binder in composite electrolytes
 AUTHOR(S): Inada, Taro; Takada, Kazunori; Kajiyama,
 Akihisa; Sasaki, Hideki; Kondo, Shigeo;
 Watanabe, Mamoru; Murayama, Masahiro; Kanno,
 Ryoji
 CORPORATE SOURCE: Advanced Materials Laboratory, National
 Institute for Materials Science, Tsukuba,
 Ibaraki, 305-0044, Japan
 SOURCE: Journal of Power Sources (2003), 119-121,
 948-950
 CODEN: JPSODZ; ISSN: 0378-7753
 PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
 LANGUAGE: English

IT 12136-58-2P, Lithium sulfide (Li₂S)

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(glass, phosphate sulfide, electrolyte composite with silicone rubber, CP-2000, or SBR; effect of silicone rubber as binder in composite electrolytes)

RN 12136-58-2 HCPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 106107-54-4

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, block, electrolyte composite with lithium-ion conductive phosphate sulfide and thio-phosphate glasses; effect of silicone rubber as binder in composite electrolytes)

RN 106107-54-4 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH—CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH—Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 36, 38, 76

ST silicone rubber binder composite electrolyte SBR polyoxyalkylene solid **battery**; ionic cond lithium ion germanium phosphate sulfide thiosulfide glass

IT **Battery** electrolytes
Binders
Polymer electrolytes
(effect of silicone rubber as binder in composite electrolytes)

IT 10377-52-3P, Lithium phosphate (Li₃PO₄) **12136-58-2P**,
Lithium sulfide (Li₂S) 13759-10-9P, Silicon sulfide (SiS₂)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(glass, phosphate sulfide, electrolyte composite with silicone rubber, CP-2000, or SBR; effect of silicone rubber as binder in composite electrolytes)

IT **106107-54-4**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, block, electrolyte composite with lithium-ion conductive phosphate sulfide and thio-phosphate glasses; effect of silicone rubber as binder in composite electrolytes)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:162951 HCAPLUS
DOCUMENT NUMBER: 139:87746
TITLE: Fabrication and properties of composite solid-state electrolytes
AUTHOR(S): Inada, Taro; Takada, Kazunori; Kajiyama, Akihisa; Kouguchi, Masaru; Sasaki, Hideki; Kondo, Shigeo; Watanabe, Mamoru; Murayama, Masahiro; Kanno, Ryoji
CORPORATE SOURCE: Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SOURCE: Solid State Ionics (2003), 158(3,4), 275-280
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
IT **12136-58-2**, Lithium sulfide
RL: DEV (Device component use); USES (Uses)
(electrolyte glass contg.; prepn. and properties of glass-rubber

composite solid-state electrolytes for lithium **batteries**
)

RN 12136-58-2 HCPLUS
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, binder; prepn. and properties of
glass-rubber composite solid-state electrolytes for lithium
batteries)

RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C₄ H₆

H₂C=CH—CH=CH₂

CM 2

CRN 100-42-5

CMF C₈ H₈

H₂C=CH—Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 76

ST oxysulfide glass rubber composite solid electrolyte lithium
battery

IT Silicone rubber, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(binder; prepn. and properties of glass-rubber composite
solid-state electrolytes for lithium **batteries**)

IT Sulfide glasses

RL: DEV (Device component use); USES (Uses)

(electrolytes; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT **Battery electrolytes**

Solid electrolytes

(prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT 10377-52-3, Lithium phosphate 12136-58-2, Lithium sulfide

13759-10-9, Silicon disulfide

RL: DEV (Device component use); USES (Uses)

(electrolyte glass contg.; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

)

IT 361393-39-7

RL: DEV (Device component use); USES (Uses)

(electrolyte; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, binder; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

REFERENCE COUNT:

10

THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 11 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:56629 HCAPLUS

DOCUMENT NUMBER: 138:124972

TITLE: Lithium ion-conductive sulfide-type solid electrolyte molding and lithium **battery** using the electrolyte

INVENTOR(S): Inada, Taro; Takada, Kazunori; Kondo, Shigeo; Watanabe, Jun; Kanno, Ryoji; Kajiyama, Akihisa; Sasaki, Hideki

PATENT ASSIGNEE(S): National Institute for Research In Inorganic Materials, Japan; Toda Kogyo Corp.; Japan Storage Battery Co., Ltd.; Denki Kagaku Kogyo Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----

JP 2003022707

A2 20030124

JP 2001-206456

200107
06

PRIORITY APPLN. INFO.:

JP 2001-206456

200107
06

IT 12136-58-2, Lithium sulfide

RL: RCT (Reactant); RACT (Reactant or reagent)
(for prepn. of lithium ion-conductive sulfide-type solid
electrolyte molding for lithium **battery**)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li2S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li—S—Li

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, in lithium ion-conductive sulfide-type
solid electrolyte molding for lithium **battery**)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH—CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH—Ph

IC ICM H01B001-06

ICS C01G017-00; H01M006-18; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 39, 76

ST lithium ion conductive sulfide electrolyte **battery**; solid state electrolyte lithium sulfide; germanium phosphorus lithium sulfide solid electrolyte; styrene butadiene rubber sulfide solid electrolyte; impact resistance solid state ion conductor

IT Styrene-butadiene rubber, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in lithium ion-conductive sulfide-type solid electrolyte molding for lithium **battery**)

IT Impact-resistant materials
 Ionic conductors
 Secondary **batteries**
 Solid electrolytes
 (lithium ion-conductive sulfide-type solid electrolyte molding for lithium **battery**)

IT 12025-34-2, Germanium sulfide (GeS2) 12136-58-2, Lithium sulfide 140435-84-3, Phosphorus sulfide (P2S5)
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for prepn. of lithium ion-conductive sulfide-type solid electrolyte molding for lithium **battery**)

IT 361393-39-7P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (lithium ion-conductive sulfide-type solid electrolyte molding for lithium **battery**)

IT 9003-55-8
 RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, in lithium ion-conductive sulfide-type solid electrolyte molding for lithium **battery**)

L62 ANSWER 12 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:575465 HCAPLUS

DOCUMENT NUMBER: 137:143037

TITLE: Method for preparing thin fiber-structured polymer web

INVENTOR(S): Lee, Wha Seop; Jo, Seong Mu; Chun, Suk Won;
 Choi, Sung Won

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

US 2002100725	A1	20020801	US 2001-14550	200112	14
KR 2002063020	A	20020801	KR 2001-3685	200101	26
JP 2002249966	A2	20020906	JP 2001-382608	200112	17
CN 1367276	A	20020904	CN 2002-102522	200201	25
PRIORITY APPLN. INFO.:			KR 2001-3685	A	200101
					26

IT 9003-55-8, Butadiene-styrene copolymer

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(method for prep. thin fiber-structured polymer web)

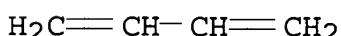
RN 9003-55-8 HCPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

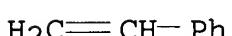
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM B01D039-08

INCL 210503000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37, 47ST battery electrolyte layer fiber structured polymer web;
sulfur based secondary **battery** fiber structured
polymer web; lithium secondary battery fiber structured polymer web;
fuel cell fiber structured polymer web; filter fiber structured
polymer webIT 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5,
Polyvinyl alcohol 9002-98-6, PolyAziridine 9003-20-7, Polyvinyl
acetate 9003-55-8, **Butadiene-styrene**
copolymer 9004-34-6, Cellulose, uses 9004-35-7,
Cellulose acetate 9004-36-8 9011-08-9 9011-14-7, Pmma
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
24937-16-4, Nylon 12 24937-79-9, Pvdf 24980-34-5, Ethylene
sulfide polymer 24980-41-4, Caprolactone homopolymer 25014-41-9,
Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses
25085-53-4, Isotactic polypropylene 25086-89-9, Vinyl
acetate-vinyl pyrrolidone copolymer 25233-30-1, Polyaniline
25322-69-4, Polypropylene oxide 25569-53-3, Poly(ethylene
succinate) 25749-57-9 26063-00-3, Polyhydroxybutyrate)
26100-51-6, Polylactic acid 26124-68-5, Polyglycolic acid
27083-66-5, Poly(propylene fumarate) 34346-01-5, Glycolic
acid-DL-lactic acid copolymer 50327-22-5 98973-15-0,
Poly(bis-(2-(2-methoxy-ethoxyethoxy))phosphazene 136511-06-3, Meep
RL: DEV (Device component use); PEP (Physical, engineering or
chemical process); PYP (Physical process); PROC (Process); USES
(Uses)

(method for prep. thin fiber-structured polymer web)

L62 ANSWER 13 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:231016 HCAPLUS

DOCUMENT NUMBER: 136:339451

TITLE: High levels of the onco-protein Gfi-1 accelerate
T-cell proliferation and inhibit activation
induced T-cell death in Jurkat T-cellsAUTHOR(S): Karsunky, Holger; Mende, Ines; Schmidt,
Thorsten; Moroy, TarikCORPORATE SOURCE: Institut fur Zellbiologie (Tumorforschung), IFZ,
Universitatsklinikum Essen, Essen, D-45122,
GermanySOURCE: Oncogene (2002), 21(10), 1571-1579
CODEN: ONCNES; ISSN: 0950-9232

PUBLISHER: Nature Publishing Group

DOCUMENT TYPE: Journal

LANGUAGE: English

CC 15-10 (Immunochemistry)

Section cross-reference(s): 14

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 14 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:246074 HCAPLUS
DOCUMENT NUMBER: 126:295564
TITLE: The low current domain of the aluminum/
sulfur battery
AUTHOR(S): Licht, Stuart; Hwang, Jin; Light, Truman S.;
Dillon, Rensl
CORPORATE SOURCE: Department of Chemistry, Technion-Israel
Institute of Technology, Haifa, 32000, Israel
SOURCE: Journal of the Electrochemical Society (1997),
144(3), 948-955
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST aluminum **sulfur battery** secondary low current;
anode aluminum mercury contg electrolyte
IT Battery anodes
Battery electrolytes
Secondary batteries
(low current domain of the aluminum/**sulfur**
battery)
IT 7429-90-5, Aluminum, uses 146340-84-3, Alcan DH50V
RL: DEV (Device component use); USES (Uses)
(anode; low current domain of the aluminum/**sulfur**
battery)
IT 10045-94-0, Mercury nitrate 12058-66-1, Sodium stannate
20661-21-6, Indium hydroxide
RL: DEV (Device component use); USES (Uses)
(electrolyte additive; low current domain of the aluminum/
sulfur battery)
IT 1312-73-8, Potassium sulfide
RL: DEV (Device component use); USES (Uses)
(electrolyte; low current domain of the aluminum/**sulfur**
battery)
REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L62 ANSWER 15 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:919585 HCAPLUS

TITLE: Common student misconceptions in the field of electrochemistry: Galvanic, Electrolytic, and concentration cells.
 AUTHOR(S): Sanger, Michael J.; Greenbowe, Thomas J.
 CORPORATE SOURCE: Department Chemistry, Iowa State University, Ames, IA, 50011, USA
 SOURCE: Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 1, CHED-066. American Chemical Society: Washington, D. C.
 CODEN: 61XGAC
 DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English

L62 ANSWER 16 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1989:25026 HCPLUS
 DOCUMENT NUMBER: 110:25026
 TITLE: Microporous propylene polymer films
 INVENTOR(S): Nago, Kuniya; Nakamura, Shunichi
 PATENT ASSIGNEE(S): Tokuyama Soda Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63108041	A2	19880512	JP 1987-143997	198706 11
JP 05083099	B4	19931124		
CA 1311886	A1	19921229	CA 1987-539409	198706 11
US 4791144	A	19881213	US 1987-61221	198706 12
PRIORITY APPLN. INFO.:			JP 1986-135018	A1 198606 12
			JP 1986-136153	A1 198606 13

IT 9003-17-2

RL: USES (Uses)

(rubber, hydroxy-terminated, hydrogenated, plasticizers,
propylene polymer contg., for microporous films)

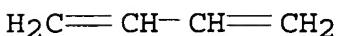
RN 9003-17-2 HCPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC ICM C08J009-00

CC 38-3 (Plastics Fabrication and Uses)

IT 1309-42-8, Kisuma S 4

RL: USES (Uses)

(powds., propylene polymer contg., for microporous films, for
battery separators, Kisuma S-4)

IT 9003-17-2

RL: USES (Uses)

(rubber, hydroxy-terminated, hydrogenated, plasticizers,
propylene polymer contg., for microporous films)

L62 ANSWER 17 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1988:513532 HCPLUS

DOCUMENT NUMBER: 109:113532

TITLE: Battery electrode materials

INVENTOR(S): Fujii, Masayuki; Toda, Hideo; Wakayama, Tatsuo

PATENT ASSIGNEE(S): Mitsubishi Petrochemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
JP 63143746	A2	19880616	JP 1986-288934	198612 05

PRIORITY APPLN. INFO.:

JP 1986-288934

198612
05

IT 9003-17-2

RL: USES (Uses)

(rubber, **cathodes** from iodine-**sulfur**-, for
nonaq.-electrolyte **batteries**)

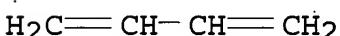
RN 9003-17-2 HCPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC ICM H01M004-36

ICS H01M004-02; H01M004-60; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39ST **battery cathode sulfur iodine; polymer**
vulcanized iodine **sulfur cathode**IT Rubber, butadiene, uses and miscellaneous
RL: USES (Uses)(cathodes from iodine-**sulfur**-, for
nonaq.-electrolyte **batteries**)IT **Cathodes**(battery, **sulfur-iodine-vulcanized polymer**,
nonaq.-electrolyte)IT 7704-34-9, **Sulfur**, uses and miscellaneous

RL: USES (Uses)

(cathodes from iodine-vulcanizable polymer-, for
nonaq.-electrolyte batteries)

IT 7553-56-2, Iodine, uses and miscellaneous

RL: USES (Uses)

(cathodes from **sulfur-vulcanizable polymer**-,
for nonaq.-electrolyte batteries)

IT 9003-17-2

RL: USES (Uses)

(rubber, **cathodes** from iodine-**sulfur**-, for
nonaq.-electrolyte **batteries**)

L62 ANSWER 18 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1988:425295 HCAPLUS
 DOCUMENT NUMBER: 109:25295
 TITLE: Plastic grids and their application in miner's lamp batteries
 INVENTOR(S): Zhai, Wangsheng; Lu, Yuli; et al.
 PATENT ASSIGNEE(S): Jiyuan Miner's Lamp Factory, Henan Province, Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 6 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
CN 86105462	A	19870624	CN 1986-105462	198608 26
PRIORITY APPLN. INFO.:			CN 1986-105462	198608 26

IT 9003-56-9
 RL: USES (Uses)
 (anode grids from copper- and lead-coated, for miner's lamp batteries)
 RN 9003-56-9 HCAPLUS
 CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

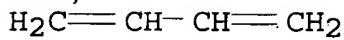
CM 1

CRN 107-13-1
CMF C3 H3 N

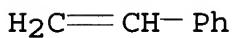
H2C=CH-C≡N

CM 2

CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8

IC ICM H01M004-72
ICS H01M004-66; H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lead battery anode **ABS** grid; copper coating **ABS**
anode grid
IT Anodes
(battery, grids for lead-acid, copper- and lead-coated
ABS polymer, for miner's lamp)
IT 7439-92-1, uses and miscellaneous 7440-50-8, uses and
miscellaneous
RL: USES (Uses)
(anode grids from **ABS** polymer coated with, for miner'
s lamp **batteries**)
IT 9003-56-9
RL: USES (Uses)
(anode grids from copper- and lead-coated, for miner's
lamp **batteries**)

L62 ANSWER 19 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1987:545704 HCPLUS
DOCUMENT NUMBER: 107:145704
TITLE: Vapor deposited chrome-copper-chrome laminates
for electromagnetic interference/radio frequency
interference shields
AUTHOR(S): Miller, Walter J.
CORPORATE SOURCE: Stokes Div., Pennwalt Corp., Philadelphia, PA,
19120, USA
SOURCE: Journal of Vacuum Science & Technology, A:
Vacuum, Surfaces, and Films (1987), 5(4, Pt. 4),
2706-8
CODEN: JVTAD6; ISSN: 0734-2101

DOCUMENT TYPE: Journal
LANGUAGE: English
CC 76-14 (Electric Phenomena)

L62 ANSWER 20 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1987:523704 HCPLUS
DOCUMENT NUMBER: 107:123704
TITLE: Ultraviolet and visible fluorescence produced by controlled electron impact on sulfur dioxide
AUTHOR(S): Miller, K., Jr.; Becker, K.
CORPORATE SOURCE: Dep. Phys., Lehigh Univ., Bethlehem, PA, 18015, USA
SOURCE: Canadian Journal of Physics (1987), 65(5), 530-4
CODEN: CJPHAD; ISSN: 0008-4204
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT Fluorescence
(cathodo-, of sulfur dioxide and its fragment after controlled)

L62 ANSWER 21 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1986:482193 HCPLUS
DOCUMENT NUMBER: 105:82193
TITLE: Rapid testing of beta alumina ceramics
AUTHOR(S): Sudworth, J. L.
CORPORATE SOURCE: Beta Res. und Dev. Ltd., Sinfen Derby, DE2 9GN, UK
SOURCE: Journal of Power Sources (1986), 17(1-3), 188-94
CODEN: JPSODZ; ISSN: 0378-7753
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST alumina electrolyte testing battery; sodium sulfur battery electrolyte testing
IT 1305-78-8, uses and miscellaneous 12057-24-8, uses and miscellaneous
RL: USES (Uses)
(alumina electrolytes contg., rapid testing of, for sodium-sulfur battery)
IT 12005-16-2
RL: USES (Uses)
(electrolytes, rapid testing of, for sodium sulfur battery)

L62 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1985:446770 HCAPLUS
 DOCUMENT NUMBER: 103:46770
 TITLE: Electron emission and surface composition of
 osmium and osmium-tungsten coated dispenser
 cathodes
 AUTHOR(S): Brion, D.; Tonnerre, J. C.; Shroff, A.
 CORPORATE SOURCE: Electron Tube Div., Thomson-CSF,
 Boulogne-Billancourt, F-92102, Fr.
 SOURCE: Applications of Surface Science (1977-1985)
 (1985), 20(4), 429-56
 CODEN: ASUSDD; ISSN: 0378-5963
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 CC 76-12 (Electric Phenomena)
 Section cross-reference(s): 66

L62 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1984:14533 HCAPLUS
 DOCUMENT NUMBER: 100:14533
 TITLE: Article having a layer of a nickel-phosphorus
 alloy and coated with a protective layer
 INVENTOR(S): Krijl, Gerrit; Van de Leest, Renaat Edmond
 PATENT ASSIGNEE(S): N. V. Philips' Gloeilampenfabrieken, Neth.
 SOURCE: Eur. Pat. Appl., 10 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 94127	A1	19831116	EP 1983-200633	198305 03
EP 94127 R: DE, FR, GB, IT, NL NL 8201849	B1 A	19851121 19831201	EP 1983-200633 NL 1982-1849	198205 06
US 4497877	A	19850205	US 1983-491101	198305 03
JP 58207392	A2	19831202	JP 1983-79227	198305

06

JP 02016398	B4	19900417		
US 4545871	A	19851008	US 1984-667936	198411
02				
PRIORITY APPLN. INFO.:			NL 1982-1849	A
				198205
				06
			US 1983-491101	A3
				198305
				03

IC C25D011-38; C25D011-36; C23F007-08; C23F007-26
 CC 72-8 (Electrochemistry)

L62 ANSWER 24 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1980:60509 HCPLUS
 DOCUMENT NUMBER: 92:60509
 TITLE: Electrocoating of an article
 INVENTOR(S): Kubo, Akira; Todoroki, Nobuaki; Teshima, Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu; Kasai, Akio
 PATENT ASSIGNEE(S): Shinto Paint Co., Ltd., Japan; Honda Motor Co., Ltd.
 SOURCE: Ger. Offen., 20 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2919130	A1	19791115	DE 1979-2919130	197905 11
DE 2919130	B2	19801113		
DE 2919130	C3	19860417		
JP 54148037	A2	19791119	JP 1978-56009	197805 11
JP 56020359	B4	19810513		
JP 54148038	A2	19791119	JP 1978-56010	197805 11

US 4208262 A 19800617 US 1979-37853

197905

10

PRIORITY APPLN. INFO.: JP 1978-56009

197805

11

JP 1978-56010

A

197805

11

IT 9003-17-2D, anionic derivs.

RL: USES (Uses)

(electrocoating with, on surfaces electrocoated with epoxy resins in powd. form, with improved quality)

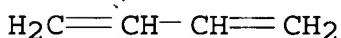
RN 9003-17-2 HCPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC C25D013-06; B05D003-00

CC 42-7 (Coatings, Inks, and Related Products)

IT 9003-17-2D, anionic derivs.

RL: USES (Uses)

(electrocoating with, on surfaces electrocoated with epoxy resins in powd. form, with improved quality)

L62 ANSWER 25 OF 31 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1977:420283 HCPLUS

DOCUMENT NUMBER: 87:20283

TITLE: Activity and intracellular localization of lysosomal acid phosphatase in lymphocytes from patients with Hodgkin's disease, plasma cell myeloma and primary polycythemia

AUTHOR(S): Lisiewicz, Jerzy; Astaldi, Giovanni

CORPORATE SOURCE: Inst. Intern. Med., Acad. Med., Krakow, Pol.

SOURCE: Tumori (1976), 62(6), 651-7

CODEN: TUMOAB; ISSN: 0300-8916

DOCUMENT TYPE: Journal

LANGUAGE: English
 CC 14-10 (Mammalian Pathological Biochemistry)

 L62 ANSWER 26 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1975:117839 HCAPLUS
 DOCUMENT NUMBER: 82:117839
 TITLE: Analysis of the light emitted from electrodes
 during electrode effects in some electrolytic
 aqueous solutions
 AUTHOR(S): Guilpin, Christian; Garbarz-Olivier, Jocelyne
 CORPORATE SOURCE: Lab. Phys. Liq. Ion., Univ. Paris-VI, Paris, Fr.
 SOURCE: Journal de Chimie Physique et de Physico-Chimie
 Biologique (1974), 71(11-12), 1491-8
 CODEN: JCPBAN; ISSN: 0021-7689
 DOCUMENT TYPE: Journal
 LANGUAGE: French
 CC 72-12 (Electrochemistry)
 Section cross-reference(s): 73

L62 ANSWER 27 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1965:471445 HCAPLUS
 DOCUMENT NUMBER: 63:71445
 ORIGINAL REFERENCE NO.: 63:13092b-h,13093a-b
 TITLE: Electrolytic hydrodimerization of two different
 α, β -olefinic compounds
 INVENTOR(S): Baizer, Manuel M.
 PATENT ASSIGNEE(S): Monsanto Co.
 SOURCE: 7 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
US 3193476	-----	19650706	US 1961-163028	196012 12

INCL 204073000
 CC 33 (Aliphatic Compounds)

L62 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1963:473603 HCAPLUS
 DOCUMENT NUMBER: 59:73603
 ORIGINAL REFERENCE NO.: 59:13597a-b
 TITLE: Electric transfer of ions in absolute H₂SO₄

AUTHOR(S): Kudra, O. K.; Zhitomirskii, A. N.; Fialkov, Yu. Ya.
 CORPORATE SOURCE: Polytech. Inst., Kiev
 SOURCE: Doklady Akademii Nauk SSSR (1963), 151(2), 377-9
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 CC 15 (Electrochemistry)

L62 ANSWER 29 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1963:452311 HCAPLUS
 DOCUMENT NUMBER: 59:52311
 ORIGINAL REFERENCE NO.: 59:9459b-c
 TITLE: Determination of absolute probabilities of transitions of the line Ba I in a direct current arc
 AUTHOR(S): Lebedeva, V. V.
 SOURCE: Fiz. Probl. Spektroskopii, Akad. Nauk SSSR, Materialy 13-go [Trinadtsatogo] Soveshch., Leningrad, 1960 (1962), 1, 43-5
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 CC 10 (Spectra and Some Other Optical Properties)
 IT 7440-39-3, Barium
 (spectrum of, in d.c. arc, **abs.** transition probabilities in)

L62 ANSWER 30 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1962:1607 HCAPLUS
 DOCUMENT NUMBER: 56:1607
 ORIGINAL REFERENCE NO.: 56:261g-h
 TITLE: Mechanism of the cathodic reduction of zinc oxide phase layers on a zinc electrode
 AUTHOR(S): Oshe, A. I.; Bagotskii, V. S.
 CORPORATE SOURCE: Inst. Electrochem., Moscow
 SOURCE: Zhurnal Fizicheskoi Khimii (1961), 35, 1641-2
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 CC 22 (Electrochemistry)
 IT Coating(s)
 (anodic, on metal **cathodes**, redn. of)

L62 ANSWER 31 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1946:25373 HCAPLUS
 DOCUMENT NUMBER: 40:25373
 ORIGINAL REFERENCE NO.: 40:4964h-i,4965a

TITLE: The cathodic overvoltage of copper amalgams in nitrate solutions
AUTHOR(S): Bonnemay, Maurice; Hamelin, Antoinette
SOURCE: Compt. rend. (1946), 222, 176-7
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
CC 4 (Electrochemistry)

=>